

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

Vol. XXVIII MAY-JUNE, 1956 No. 3

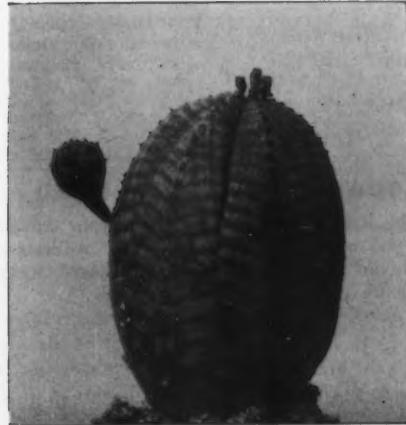


FIG. 42. An interesting *Euphorbia obesa* which does not usually branch. From the late White and Sloane collection.



CACTUS AND SUCCULENT JOURNAL

Published and owned by the Cactus and Succulent Society of America, Inc., 132 W. Union St., Pasadena, Calif. A magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. North and South America \$3.00 per year; foreign \$3.50 by money order. Mail application to SCOTT HASELTON, Editor, 132 West Union Street, Pasadena 1, California. *Editorial Staff: THE ENTIRE SOCIETY.* Entered as second Class Matter at Pasadena, Calif., under act of March 3, 1879. Published bi-monthly. We reserve the right to accept or reject advertising or articles sent to this JOURNAL.

Vol. XXVIII

MAY-JUNE, 1956 (Price 50¢)

No. 3

CONTENTS

News of the Research Board.....	Homer G. Rush 70
New Bolivian Cacti—Part 4 Continued.....	Prof. Martin Cárdenas 71
Notes on Haworthias	J. R. Brown 76
Questions and Answers.....	Harry Johnson 78
Cactus Shows Are Fun.....	Malcom Martin 81
The Micropuntias	Edwin F. Wiegand 82
Epiphyllums in England.....	F. R. McQuown 83
Blooming Dates of Cacti	84, 85, 95
A Revision of the Family Fouquieriaceae, Reprint.....	George V. Nash 87
Sempervivums—Hen and Chickens	C. W. Wood 92
From New York	Agnes T. Hirsninger 97
Spotlight on Round Robins	Mrs. Gladys Panis 98
Spine Chats	Ladislau Cutak 99

NEWS OF THE RESEARCH BOARD

At a recent meeting of the Research Board held April 13th, the Board was unanimous in the decision that the Board should proceed with several projects which are being prepared for the use of the Affiliates, the members, or other Garden Clubs.

The first of these projects is the arrangement of the Society's colored slide sets so that a complete story of the slides may be recorded and sent along with the slides so that the Affiliates or other Clubs will be able to hear the information about the plants as well as to see the pictures. For this service, a small charge will be made to cover the cost of the tape and the postage and insurance, this charge to be announced later when the actual cost has been figured out.

The Research Board is also nearly ready to start operation of another service to the members of the Society by making available certain plants and seeds of cacti and/or other succulents which are now available to the Research Board through the co-operation of one of our largest Universities. Again, a small charge will have to be made to cover the cost of packaging and mailing and the Board must also require that certain requests must be made of the member requesting the plants. The announcement of this service will soon be made in the columns of the Journal. Watch for it.

The Research Board is anxious to learn the reaction of the members to these new services, so we are asking you to write us what you think of these ideas and whether you feel they will be

of use to your Affiliate or to you. Will you do this much? Address all communications to The Research Board, 820 W. 115th St., Los Angeles 44, Calif.

The Research Board was founded entirely for the benefit of the members of the Society and for the Affiliate Societies and while many have taken advantage of the services, a very large percentage have not as yet used any of the services offered. Let's have a letter from each of you so we can determine what we can do for you.

The Committee for plant identification is still working on the identification of any plants sent in for this purpose and is happy to help you.

Now! Let's have those letters, hundreds of them, so the Research Board will feel that their efforts are appreciated.

HOMER G. RUSH, Chairman
820 W. 115th Street

EDITOR'S NOTE

We are glad that so many members are beginning to send in their experiences to share with others. We also want to remind the scientific minded readers that we can use material for advanced growers. For example, there are many members from Texas, in fact it is now one of the leading states, and we should have many contributions about the cacti of that state. We can publish all of the good photographs that are sent to us. Now is the chance to see some pictures of the cacti of Texas—or of any state.

Vacation time is approaching and your Editor plans an extensive trip and asks leniency from our members during June and July. If orders are delayed, please overlook it because we are way behind on our vacations!

SCOTT HASELTON

New Bolivian Cacti - Part 4

By Prof. Martín Cárdenas

Continued from Vol. XXXVIII, No. 2, pg. 61

Echinopsis subdenudatus Cárdenas, sp. nov.

Simplex, globosus, 5-8 cm. altus, 7-12 cm. latus, cinereo viridis. Costis 10-12, rectis, acutissimis, 1 cm. altis, 2 cm. a base latis. Areoles 1.5 cm. separatis, horizontaliter ellipticis, 4 mm. long., cremen tomentosis. Aculeis radiales 3-5, cinereo brunescentes, 1.5 mm. long.; centralibus solitarius 2 mm. long. versus superne direxit. Alabastri copioso pilis obscurioris clausus. Flores pleurogenis, angustissime infundibuliformis, paulo curvatus supra ovarium, 17-20 cm. long. Ovario elliptico 15 mm. long., 8-10 mm. lato, temperato viridis, 1-2 mm. long. squamis acutis, purpureis, pilis longis albis et nigris praedito. Tubus 10-14 cm. long., 5-7 mm. crassus, diluto viridis vel flavescentibus, pauculo sursum patens, 5 mm. long squamis viridis apice purpurei, pilis longis albis et nigris praeditus. Phylla perigoni exteriora linearia 3.5 cm. long. diluto viridia vel purpurascens; phylla interiora 5.5 cm. long., spatulata, mucronata, alba. Stamina duplo seriali inserta; inferne 3 cm. long., superne 1.5 cm. long.; filamenta alba, antherae flavidulae. Stylo 12 cm. long., albo, 10 lacinis stigmatibus 1 cm. long, flavis coronato.

Patria: Bolivia, provinci Entre Ríos, departamenti Tarija, prope Angosto de Villa Montes, 600 m.

Simple, globose plants, 5-8 cm. high, 7-12 cm. broad, gray green with a narrow top depression. Ribs 10-12, very acute, about 1 cm. high, 2 cm. broad at the base, slightly crenate. Areoles 1.5 cm. apart, transversally elliptic, very small, 4 mm. long, 2 mm. broad, cream felted. Radial spines 3-5, much swollen at their bases, 1.5 mm. long, gray brownish; central spine, single, 2 mm. long upwards directed. In young areoles, the dense felt hides the spines and these are visible only in the old areoles. Flower buds 1-2 from near the top of the plants, very hairy. Flowers, narrowly funnelform, slightly curved above ovary, 17-20 cm. long. Ovary elliptic, 1.5 cm. long, 8-10 mm. broad, light green with 1-2 mm. long purple acute scales bearing dense long white and black hairs. Tube 10-14 cm. long, 5-7 mm. broad above ovary, only slightly widening above, yellowish or very light green with green purple tipped 5 mm. long acute scales which



FIG. 43
Echinopsis subdenudatus sp. nov.

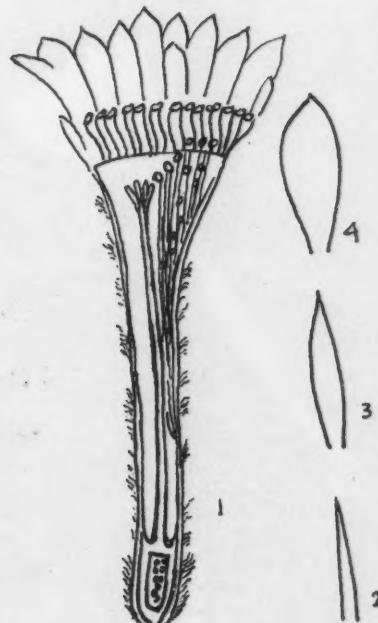


FIG. 44
Echinopsis subdenudatus sp. nov., 1 flower; 2, 3, and 4 outer, middle, and inner perianth segments; all x0.5

bear long black and white hairs. Outer perianth segments, linear, 3.5 cm. long, 3 mm. wide, green to purplish; middle segments, lanceolate 45 x 5 mm., white, purple greenish outside; inner segments 55 x 15 mm., spatulate pure white, mucronate. Stamens in two rows; lower ones 3 cm. long; upper ones 1.5 cm. long; filaments white, anthers light yellow. Style 12 cm. long, 1-2 mm. thick. Stigma rays 10, light yellow 1 cm. long.

Bolivia. Province of Entre Ríos. Department of Tarija. Angosto de Villa Montes, 600 m. March 1952. M. Cárdenas, No. 5056 (Type) in the Herbarium Cardenasianum, cotype in the U. S. National Herbarium.

Obs. This rare cactus, reminds the mexican Genus *Astrophytum* by its quite spineless high hatched ribs, but when flowering it resembles *Echinopsis eyriesii* (Turpin) Zuccarini from which it differs by its straight acute ribs and its subdenudate habit.

***Echinopsis hammerschmidii* Cárdenas, sp. nov.**

Simplex vel caespitosus, breviter cylindricus, 6-10 cm. altus, 7-9 cm. crassus, apex paulo depresso, atroviridis. Costis plus minusve 15, acutis, crenatis, aciebus interdum purpureis, 1.5 cm. altis, 1.5 cm. a basi

latis. Areolis 1 cm. inter se distantibus, circularibus 3 mm. diametri, paulo cinereis tomentosis. Aculei radiales 8-9 fere aequantes, 6-10 mm. longitudine, centralis unus horizontaliter directus 15-18 mm. long.; omnes aculei aciculares, atro-cinerei a basi incrassati. Flores pauci, oriuntur circa apicem, anguste infundibuliformi, 18 cm. long. Ovarium globosum, 1.5 cm. diam., squamis 3 mm. long., acutissimis, bruneis, apice nigrescentibus, pilis densis albi coloris praeditum. Tubus 13 cm. long., 1 cm. crassus, paulo sursum patens, dilute viridis, squamis acutis, 5 mm. long. et paucis pilis albis et bruneis praeditus. Phylla perigon exteriora lanceolata 3 cm. long., virida, apice brunescens; phylla interiora spatulata mucronata, 4.5 cm. long., alba. Stamina partim 5 cm. supra fundum tubi, partim e basi fauicis; filamenta densa, alba; antherae flavae. Stylus 12 cm. long., stamina non superans, inferius colore viridi, superius albidi, 10 stigmatis lacinis acutis, pilis albis et nigris, densis praedito. Semina sphaerica truncata, nigra, puncticulata, 1.8 mm. long.

Patria: Bolivia, provinci Velasco, departmenti Santa Cruz, prope "Las Lajas", 600 m.

Obs. Species detectori, Religioso Fratri Laurentio Hammerschmid dicata.

Simple or caespitose, globose to short cylindric plants, 6-10 cm. high, 7-9 cm. broad, slightly umbilicate, dark green. Ribs about 15 in a large specimen, acute, crenate, purplish



FIG. 45
Echinopsis hammerschmidii sp. nov.

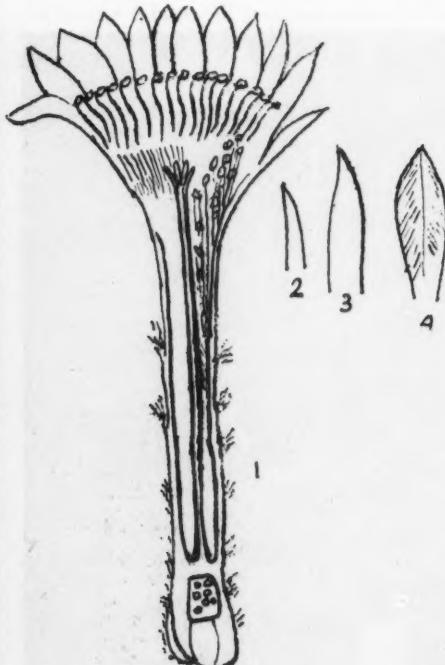


FIG. 46
Echinopsis hammerschmidii sp. nov., 1 flower, 2, 3, and 4 outer, middle, and inner perianth segments; all x0.5

edged, about 1.5 cm. high, 1.5 cm. broad at the base. Areoles 1 cm. apart, circular, 3 mm. in diameter with very little gray felt. Radial spines, 8-9 not much uneven; shortest ones 6 mm. long, medium sized ones 8 mm., longest ones, 12 mm; central spine single, horizontal, 15-18 mm. long; all spines acicular, dark gray, swollen at their bases; upper areoles spines, whitish, dark tipped. Flowers 1-2 from near the top depression, narrowly funneliform, 18 cm. long, 7 cm. limb at anthesis. Ovary 1.5 cm. long with brown blackish tipped 3 mm. long very acute scales bearing dense white hairs. Tube curved above ovary, about 13 cm. long, narrow, slightly widening above, 1 cm. in diameter above ovary, 2 cm. broad at the base of petals, light green, slightly striate with purple acute 5 mm. long scales which bear few white and brown hairs; upper tube scales, 8 mm. long, dark purple. Outer perianth segments, bent downwards, lanceolate, 3 cm. long, 4 cm. wide, green, brownish tipped; middle segments, lanceolate 5 cm. long, 7 mm. wide, white with a green central flush; innermost segments in two whorls of about 13 petals, 4.5 cm. long, 12 mm. wide, spatulate, mucronate, pure white. Stamens in two rows; lower ones, from 5 cm. upper bottom of the tube to the base of petals, 7 cm. long; upper ones from the base of petals, 3 cm. long; all filaments thread-like, white; anthers light yellow; interior of the tube, very light green. Style 12 cm. long, lower than the stamens, light green below, whitish above. Stigma rays 10 thick, light yellow, only 5 mm. long. Fruit spheroidal to elliptic, dark green, with whitish scales and dense white and black hairs, splitting lengthwise when dry. Seeds, rather large, 1.8 mm. long, globular truncate, black, roughly puncticulate.

Bolivia. Province of Velasco. Department of Santa Cruz, "Las Lajas", 600 m. February 1955. Father Lorenzo Hammerschmid. Cárdenas, No. 5057 (Type) in Herbarium Cardenasianum. Cotype in the U. S. National Herbarium.

This species does not resemble any other known in the genus. We have named it in honor of its discoverer, the Natural Science teacher, P. Lorenzo Hammerschmid.

Echinopsis arebaloi Cárdenas, sp. nov.

Caespitosus, globosus a vertice depresso, 6-10 cm. altus 8-10 cm. crassus, atro veridis. Costis plus minusve 11, obtusis, 1 cm. altis, 2 cm. latis. Areolae 1-1.5 remotis, circularis, 7 mm. diam. prominentibus, cinereo tomentosis. Aculeis 12-15, divaricatis, acicularis, cinereis, apice brunescentes, 5-20 mm. long. Flores ex umbilicus vicinis, longo infundibuliformeis 16 cm. long. Ovario globoso, 1.5 cm. diam, temperato viridis, squamis 2 mm. long., viridis, apice albidus, pilis albis et bruneis praedito. Tubo 10 cm. long., diluto viridis, squamis 3 mm. long., acutis, viridis,



FIG. 47
Echinopsis arebaloi sp. nov.

apice roseo, pilis albis et nigris praedito. Phylla perigonae exteriora lanceolata, 5 cm. long., viridia apice purpurea; phylla interiora lato spatulata, 4.5 cm. long. Stamina inferne seriali ex 3 cm. supra ovarium, superne ex basim petalis; filamenta albido viridia; antherae diluto flavae. Stylus 10 cm. long., inferne viridis, superne flavidulus, non stamina superans, 14 ramis stigmaticis, flavis coronato.

Patria: Bolivia, provinci Valle Grande, departmenti Santa Cruz, prope Comarapa, 2,000 m.

Obs. Species detectori Francisco Arebalo dicata.

Caespitose, globose, 6-10 cm. high, 8-10 cm. broad, dark green plants. Ribs about 11, broad and rather low, 1 cm. high, 2 cm. broad at the base. Top of the plant depressed. Areoles 1-1.5 cm. apart, circular, about 7 mm. in diameter, prominent, gray felted. Uppermost areoles, dense cream felted and with very short, 5-7 mm. long spines. Spines not differentiated into radials and centrals, acicular, spreading, rather thin, 12-15, light gray, brown tipped, stiff; shortest ones, 5 mm. long, medium sized ones, 10-15 mm. long and longest ones, 20 mm. long. The longest spines of the upper areoles, downwards directed. Flowers from near the top umbilicus, long funneliform, about 16 cm. long with 8 cm aperture at anthesis. Ovary globose, 1.5 cm. long, light green with 2 mm. long,

green-white mucronate scales bearing white and a few brown long hairs. Tube 10 cm. long, 11 mm. broad above ovary, light green with 3 mm. long acute pinkish tipped green scales which bear long curled white and black hairs. Outer perianth segments lanceolate, 5 cm. long, 3 mm. broad, acute, green, purplish tipped, bent downwards at anthesis; middle segments, lanceolate, 6 cm. long, 4 mm. broad, green; innermost segments broadly spatulate, 4.5 cm. long, 3 cm. broad. Stamens in two rows; lower ones, from about 3 cm. above bottom of the tube to a height of 6 cm., 6 cm. long; upper ones, 2 cm. long, curved laterally; filaments, green below, white above; anthers light yellow. Style 10 cm. long, green below, yellowish above; stigma rays 14 not exerted, yellowish, 1 cm. long.

Bolivia. Province of Valle Grande. Department of Santa Cruz. Comarapa, 2,000 m. March 1955. F. Arebalo. Cárdenas, No. 5058 (Type) in Herbarium Cardenasianum. Cotype in the U. S. National Herbarium.

Obs. This species, differs from the other known from Bolivia by its globose habit and its broad and low ribs.



FIG. 48
Echinopsis ibicuatensis sp. nov.



FIG. 49
Echinopsis ibicuatensis sp. nov., 1 fruit x1.0;
2 seeds x4.0

***Echinopsis ibicuatensis* Cárdenas, sp. nov.**

Simplex, globosus, apice paulo depresso, 6.9 cm. altus, 8-14 cm. crassus, temperato viridis, acies purpureis. Costis in specimene majoribus, 13, acutis, 2.5 cm. altis, 2.5 cm. basim latis. Areolis 1 cm. inter se distantibus, orbicularis, prominentibus, 5 mm. diam., cinereo, tomentosis. Aculeis radiales 10, radiantes, paulo incurvatis; centrales 1-3, rectis. Omnes aculei 5-12 mm. long, aciculares, cinereis. Alabastri numerosis, pilis albis sericeis, densis velatis. Flores angustae, infundibuliformis, 18 cm. long. Ovario globoso vel elliptico 15 x 12 mm., diluto viridis, squamis 2 mm. long, acutis, purpureis, pilis albis, sericeis, copiosus, praedito. Tubo 9 cm. long., 8 mm. crasso supra ovarium, diluto viridis, striato, squamis 5 mm. long, acutis, viridis, apice purpureis, pilis albis et bruneis, instructo. Phylla perigoni exteriora, lanceolata, 2.5 cm. long, viridia, apice purpurea; phylla interiora, spatulata, 5 cm. long, mucronata, alba. Stamina duplo seriali disposita; filamenta tenuissima, alba; antherae albidae. Stylo 10 cm. long. diluto viridis, 9 lacinis stigmatinis coronato.

Fructo elliptico-oblongo 3 x 1.5 cm. virido flavis, tuberculato, squamis 2 mm. long. diluto roseis, acutis, pilis albis longis obtecto. Semina 1.5 mm. long., nigra puncticulata.

Patria: Bolivia, provinci Cordillera, departmenti Santa Cruz, in itinere Ibicuati-Cuevo, 800 m.

Simple globose, slightly flattened and depressed at the top, 6-9 cm. high, 8-14 cm. broad light green plants. Ribs in large specimens, 13, acute, 2.5 cm. high, 2.5 cm. broad at their base, with hatched and purplish edges. Ribs somewhat corrugate at the soil level. Areoles 1 cm. apart, circular, prominent, 5 mm. in diameter, gray felted. Radial spines, about 10, spreading slightly curved; central spine mostly 1, some times 3, straight. Shortest spines, 5 mm. long, medium sized ones, 10 mm., longest ones, 12 mm. long; central spines not longer than marginals. Top areoles very close one another, cream felted and bearing whitish yellow spines. All spines, acicular, ash gray colored. Flower buds numerous from near the top of stem, sometimes 4 in a single rib and about 25 or more in total, covered

with dense white silky hairs. Flowers night blooming, sometimes 3 or more opened at the same time making a beautiful white bouquet. Each flower, narrowly funnelform, about 18 cm. long, 5 cm. limb when opened. Ovary globose, elliptic, 15 x 12 mm., light green with 2 mm. long acute, purple scales which bear very dense silky white hairs. Tube 9 cm. long, 8 mm. broad above ovary, light green striate, very slightly widening above, with 5 mm. long, acute, green purple tipped scales in 5 spiral series and bearing white hairs and a few brown ones. Outer perianth segments lanceolate 2.5 cm. long, 4 mm. broad, green, purple brownish tipped, acute; middle segments, lanceolate 4.5 cm. long, 8 mm. broad, white below, green purplish above; inner segments, spatulate 5 cm. long, 12 mm. broad, mucronate, pure white. Stamens in two rows; lower ones, from 3 cm. above the

bottom of the tube to 1 cm. below the upper ones, about 6 cm. long; upper stamens 1.5-2 cm. long; filaments very thin, white, anthers white. Style 10 cm. long, 1.2 mm. thick, light green below, yellowish above. Stigma lobes 9, not exserted, yellow greenish, 7 mm. long. Fruit elliptic-oblong, 3 x 1.5 cm., tuberculate, green, turning yellow when ripe, covered by 2 mm. long pink acute scales which bear white long hairs and splitting lengthwise. Seeds 1.5 mm. long black, punctulate.

Bolivia. Province of Cordillera. Department of Santa Cruz. On the way Ibicuati to Cuevo, 800 m. August 1954, A. Corro, Cárdenas, No. 5059 (Type) in Herbarium Cardenasianum. Cotype in the U. S. National Herbarium.

Obs. This pretty cactus is striking by the number of flowers opened at the same time.

To be continued



FIG. 50

Two gardens 3000 miles apart are quite similar in their plantings. On the left is a view taken by J. R. Brown at Marineland, Florida. On the right is a view from Jardin Exotique de Monaco, France.

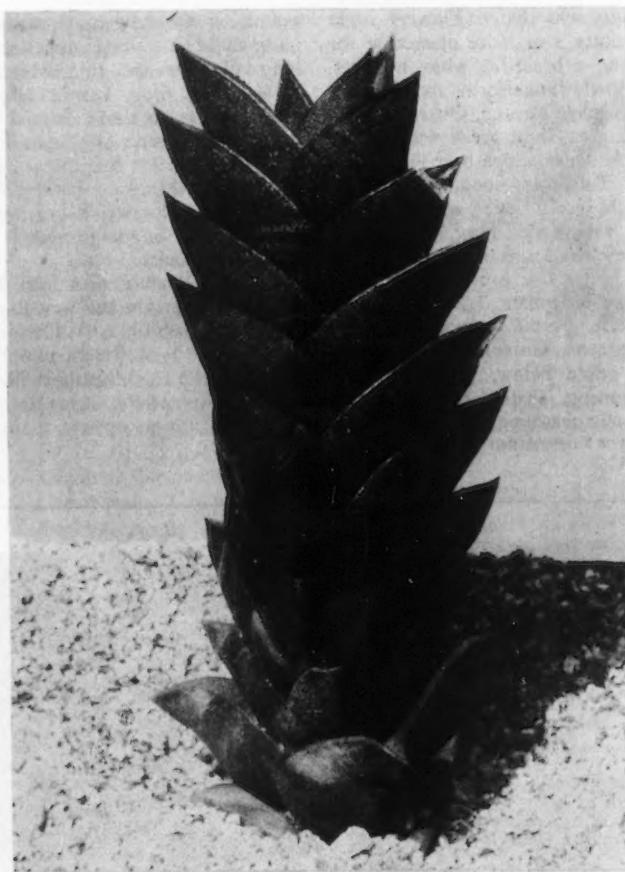


FIG. 51
Haworthia cordifolia Haw. nat. size

Notes on Haworthias

By J. R. BROWN

Haworthia cordifolia Haw.

Plant with a leafy stem 15-20 cm. tall, 5-6 cm. in diam., very slowly proliferous from the base.

Leaves closely imbricate in 3 more or less straight rows, somewhat erect, ovate-deltoid, acute, pungent, ca. 3.5 cm. long, 18-22 mm. broad, ca. 10 mm. thick, very rigid, dark green, finely rugose all over; younger leaves concave on face, becoming flatter with age and canaliculate towards tips; back very convex, keeled in the upper part, the cartilaginous margins asperulous.

Peduncle slender, simple, 30 cm. or more in length including the lax few flowered raceme; pedicels 10-12 mm. long, bracts ca. 5 mm. long,

deltoid, acuminate; perianth 15-18 mm. long, tube obclavate, sub-cylindrical, pale greenish-white with green lines; segments very recurved, obtuse, white tinged rose with darker lines.

Type locality unknown.

Introduced to England in 1818 by Dr. Mackrell.

The plant shown in the illustration was sent from So. Africa without locality. It is now 16 cm. tall about 4 years after this photograph was taken. This Haworthia, as mentioned by Poelln. (l.c.), is probably only one of the innumerable forms of *Haw. viscosa* (L.) Haw.; the differences between *Haw. asperiuscula* Haw., *Haw. cordifolia* Haw. and *Haw. viscosa* (L.) Haw. are not well defined.

Haworthia cordifolia Haw., Suppl. (1819) 60; Bak, in Journ. Linn. Soc. XVIII (1880) 200; in Th. Dyer, Fl. cap. VI (1896) 335; Berger in Pflanzenr. IV. 38. (1908) 77; Poelln. in Repert. Sp. Nov. XLIV (1938) 205. *Aloe cordifolia* Salm, Monogr. (1840) sect. 3, fig. 1; Roem, & Schult., Syst. veg. VII (1829) 653; Kunth, Enum. IV (1843) 496.

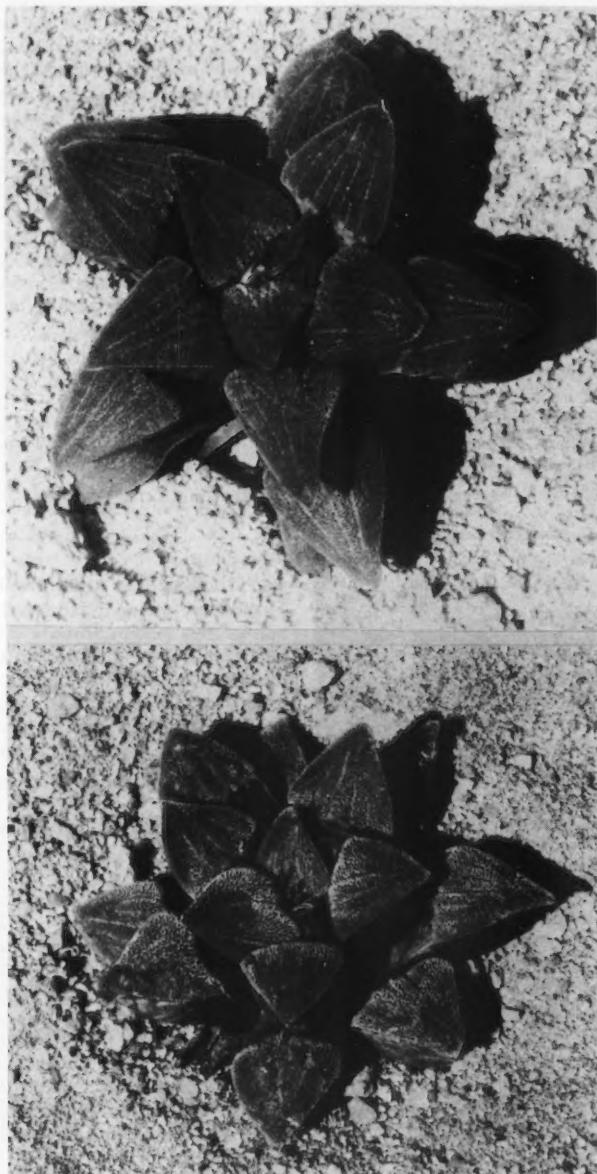


FIG. 52

Top: *Haworthia asperula* Haw. nat size. Bottom: *Haworthia* resembling *Haw. asperula* but with white-pellucid papillae. nat. size

Haworthia asperula Haw.

Plant stemless, with about 10-15 leaves, 7-8 cm. diam., simple.

Leaves somewhat spirally arranged in 5 ranks, 3-3.5 cm. long; face of leaf below the end-face smooth, pale green and concave, the triangular end-face 16-18 mm. broad, 18-20 mm. long, acute, somewhat convex, pellucid and roughened with minute concolorous papillae and with 7-9 paler lengthwise lines; the crowded papillae give the end-face a grey-green color; back of leaves triangularly convex, smooth, pale green, keeled in the upper part, the margins and keels very minutely denticulate.

Peduncle, simple, 25 cm. or more in length including raceme; sterile bracts numerous, many crowded towards base, lowermost to 20 mm. long, uppermost to 8 mm. long; (pedicels), flowers sessile, bracts about 7-8 mm. long, resembling uppermost sterile bracts; perianth 14-15 mm. long, tube obclavate, subtrigonous, white with green lines, about 4 mm. diam. towards base of tube; segments white with green lines, 3 lower very recurving, 3 inner segments with broader green lines.

Type locality unknown. Recorded in more re-

cent times by Poelln. (l.c.) from the following localities in Cape Colony: Barrydale, Zebra, Oudtshoorn, Bonnievale, and Uniondale.

Introduced to England about 1823, probably by Bowie.

The plant shown in the illustration of *Haw. asperula* is a very old one and was received from So. Africa (Bonnievale) about 20 years ago and with age shows the leaves in more distinct spiral rows than younger plants.

On several occasions a Haworthia under the name of *Haw. asperula* has been received from So. Africa which has longer papillae on the end-faces, the papillae white-pellucid, giving the plants a somewhat frosted appearance, otherwise in size, shape and flowers these plants closely resemble *Haw. asperula*. A plant of this interesting form is also illustrated.

Haw. asperula Haw. in Phil. Mag. (1824) 300; Bak. in Journ. Linn. Soc. XVIII (1880) 208, in Th. Dyer Fl. Cap. VI (1896) 345: Berger in Pflanzenr. IV. 38. (1908) 99; "H" in Succulenta XVIII (1936) 72, fig.; Poelln. in Repert. Sp. Nov. XLIII (1938) 103. *Aloe asperula* Salm, Monogr. (1836) sect. 9 fig. 2.; Roem. & Schult., Syst. veg. VII (1829) 635; Kunth, Enum. pl. IV (1843) 508.

**QUESTIONS
and ANSWERS**

Conducted by
HARRY JOHNSON
Paramount, Calif.



Question: Years ago I bought an Epiphyllum in California. It has not bloomed in recent years. There are over 70 branches, some over two feet long. It is in a large wooden tub. Please tell me what to do to get more flowers. Also my Christmas Cactus has not flowered for two years.

MRS. G. TOBER, Wash.

Answer: Probably your plant is not getting enough direct sun to properly mature the "leaves". It seems to be growing well enough otherwise. In the wilds, the parents of the Epiphyllum hybrids experience a dryer, sunnier resting period after the spring growth begins to reach maturity. During this dryer period the plants manufacture and store food for a quick start when the rains, with the consequent humidity and optimum growing conditions come again. If plants are kept growing continually throughout the year, they never have time to

store food but use it to produce new growth. They must, within reason, have an approximation of this season rhythm. They respond to a concentration of environmental phenomena in fairly precise order.

Epiphyllums flower on the older growth. The new growth produced in late fall and spring requires a year of maturation before being capable of supporting the large blossoms. The first of March, on which I am writing, plants in an outside shade or lath-house are in various stages of growth dormancy. Temperatures during fall and winter have been mild, that is to say little actual frost has been experienced though temperatures at night have been in the thirties. Some showed growth in December, some are now just showing new shoots while some are still dormant. Some are showing buds. Those with *Chiapasia* blood have already flowered or have buds almost ready to open. Plants I collected in Guatemala of *Epiphyllum crenatum* have many buds a quarter of an inch long outside while green-house plants of the same collection do not show buds as yet. This data may help our friends in colder climates to check normal growing conditions of their own plants. *Zygocactus* or Christmas Cactus are showing new growth outside now. Most have bloomed, though at Santa Barbara I saw plants in full flower last week.

Question: My Christmas Cactus always flowers on the 4th of July. Does it have the holidays confused or is my plant different from those which are supposed to flower from Christmas to May?

DOT MELENDY, *Burlington, Vt.*

Answer: I don't think it has the holidays confused. Probably just patriotic. The flowering dates of the various *Zygocacti* are approximate. Apparently they are much affected by conditions during the preceding summer. Some plants respond to the length of the day, as *Chrysanthemums*, and these plants will flower each year on almost the same date. However, *Zygocactus* must be different for they come from south of the equator and flower here at about the same time as in Brazil. I have never had them flower as late as July (or perhaps as early?). Something in your cultural methods is the reason, I would think.

Question: I have been growing cacti for three years and would like to know if it is best to remove the "pups" or shoots from around them or leave them.

MRS. G. O. DUKE, *New Mexico*

Answer: This cannot be answered unless one knows what particular plant is involved. I take it that you are perhaps thinking of *Echinopsis* which often produce multitudes of youngsters. For pot culture they will bloom better if the offsets are removed. If the plant is growing outdoors and has plenty of root room it will make a better specimen if left alone. Many cacti are cluster-forming and to remove the branches would make it impossible to ever get a nice specimen.

Question: Is *Notocactus basselbergii* self-fertile or sterile? Of the four buds that opened last year, one was in flower at the same time as *Parodia chrysacanthion*. I transferred the *Parodia* pollen to *N. basselbergii* and this one flower set seed. The seed was sown as soon as matured (July 4, 1955). The 25 seedlings so far show only the *Notocactus basselbergii* characteristics. Do *Rhipsalis* and related genera bloom on new growth only or do they bloom each year on some of the areoles that have produced flowers before as do the Epiphyllums? Is there a small and a large form or variety of *Rhipsalidopsis rosea*? Of three descriptions, all are different varying from, "tiny branches $\frac{1}{2}$ in. long," and "three centimeters" to "two to four centimeters (up to $\frac{1}{2}$ in.)." Are both forms in cultivation and available to collectors?

MRS. J. L. VANINETTI, *Oregon*

Answer: *Notocactus basselbergii* is self-sterile. By crossing it with *Parodia* you may have got a true hybrid as the genera are not too far apart or you may have induced the ovules to "set" or grow by irritation of the foreign pollen, parthenogenetically. This often happens.

Rhipsalis and other epiphytic cacti bloom on old stems as well as on the previous year's growth. Out of curiosity I just checked on several species of *Rhipsalis*. Several that retain their pretty white or red fruits from last year's blossoms also had buds and open flowers thrusting out from beneath the fruits. Many quite old stems had their scars of old blossoms and new buds appearing. This is exactly what one should expect for the areole is not a simple bud appearing at the axil of a leaf but a very complex organ. In fact it represents a telescoped shoot. It is a shoot or branch whose stem has been reduced to almost a flat surface and whose whirl of leaves with buds in their axils have been reduced with it to form the woolly cushion we call an areole. Thus it has many buds which can remain quiescent for long periods. Histological studies prove that spines and glochids are transformed leaves or petioles. Sometimes there are series of areoles as in the tips of branches of *Zygocactus*, *Hatiora*, *Schlumbergera*, and *Rhipsalidopsis*. Nature has used this artifice of telescoping in many ways to produce diverse results. The fascicles of leaves in pines are "short shoots," the torus of flower buds of the Compositae is another example as are the flowers of *Euphorbias* which are very complex. The etymology of the term areole is interesting. It comes from the Latin word "area" meaning a vacant place in a town. Areole or areola is a small vacant spot. It is a term used in astronomy, entomology, botany, and perhaps other sciences. In botany it has several applications as the area between the veins of leaves and a particular application in describing the fruits of Compositae. I have not had time to trace down its first use in description of the Cactaceae and its definite use there in describing the organ. All its other uses deal with deviations of its original meaning. Here however it refers to a definite organ. It would be interesting if some of our members could research the term with its first and later final meaning in the cactaceae.

Rhipsalidopsis rosea has many growth forms, however these forms are caused by environmental peculiarities and are not true varieties. When conditions are less than optimum the short, round or hexagonal woolly stems appear. In cooler, moister locations, if the roots are vigorous the larger, *Schlumbergera*-like oval or elliptical, flat stems appear.

Question: Several years ago I bought several cacti some of which have not flowered i.e. Star Cactus, Peanut Cactus, Powder Puff and Christmas Cactus. I have rested them during the winter and done everything that would ensure bloom.

ELLIOTT SMITH JR., N. J.

Answer: Apparently we are up against the old unsolvable problem of semantics. The meaning of words is a personal thing to each of us. Words are a poor thing to convey thoughts though we have few other means and none as practical. How to rest plants is a difficult thing to explain without the use of formulas and charts. I have long held that eventually every commercial plant will have its optimum cultural practice reduced to a formula as accurate almost as a chemical formula. It will start with formulas for composts with the soil components segregated as to size, the amount of lumens or units of light required to bring a plant to maturity or flowering point. The number of lumens per day, heat units with the amounts for each growth phase. Water, the amounts per day and the P.H. Humidity and so on with each growth factor. Then anyone comprehending the meaning and use of the formulas could get identical results with a person long familiar with the subject. It could encapsulate a lifetime of trial and error. Growers are rapidly moving toward this now, and before long some bright horticulturist will get on the ball and carve himself a niche in horticulture's hall of fame.

Getting back to the question. Resting in general practice means bringing the growth of a plant to a slow halt. During this period many things happen within the plant, few of which are actually known. We can assume, the plant finishes up its housekeeping for the year, converts and stores the food it has manufactured, in strategic places. Being quiescent it needs but a minimum of water. If too much water is given, the roots may drown and rot. If temperatures are high and no water is given the "rest" may turn into a struggle for bare survival, the plant shriveling and losing vigor. Cacti vary a great deal in their ability to deal with drought. Many times I have seen patches of cacti dead from lack of rain while other plants which do not store water have become brittle-dry and survived. Our California cacti have adapted themselves to extreme aridity and heat, while plants from the high Andes could not possibly survive under such conditions. If plants are plump, they do not need water, a little shrinking will not hurt, actual shriveling will. Lower temperatures during the rest period are best, for then the water factor seldom becomes pressing. They can do with less light at this period also, but

the more light the better is a good rule of thumb. The farther north you are the longer should be the rest period. Growth made during the limited light period of early spring is seldom vigorous, normal growth and spines may be weak or even absent. Proper resting and proper light should make your plants bloom.

Question: No matter what I do, my cacti wither and rot regardless of whether they are overwatered or kept dry. I am most interested in their unusual forms and anxious to have them bloom.

OSCAR B. STEVENS, N. J.

Answer: Cacti are slow growing plants. They may not respond rapidly to changes in cultural methods. Impatience is the bane of the beginner in cactus culture. Start out right. Pot your plants up in barely damp soil using a size pot that will just hold the roots comfortably. Do not water for a week or even two or three weeks or more. Let the broken roots form calluses. They cannot grow until they do and they callus surer and better on the quite dry side. Then water only when the soil is dry. Not just because they are dry on top; dig down and see if it is dry an inch down. Experience will shortly teach you when they are dry enough to water again. When plants are well rooted they will benefit by being shifted to the next size pot. Give them plenty of fresh air if you want to flower and grow them into specimens. Many people want them only for their ornamental value and thus used they can be put in dish gardens and can be kept away from light if not watered. Don't expect them to flower under these conditions.

Question: Books say to use old cow manure. We have no old cows on our farm. What shall I do?

PHIL NELSON, Ryegate, Vt.

Answer: I had the same trouble, never could find cows old enough to produce the right kind of manure for cacti. I solved the problem long ago by not using manure in any of my cactus soils. Chemical fertilizers seem to suit cacti very well. Cow manure used as a top dressing in summer produces marvelous results, mostly because it protects the surface roots from direct solar radiation. My personal experience has been pathetic when using farmyard products mixed with potting soils.

Please send your questions to Harry Johnson, Johnson Cactus Gardens, Paramount, California.

CACTUS SHOWS ARE FUN

Here is the latest dope on the Philadelphia Cactus and Succulent Society.

Last fall we were invited to enter an exhibit of cacti and succulents in The Philadelphia Flower Show to be held March 12 to 17, 1956. The original suggestion was for a 20 x 20 foot desert garden involving the handling of tons of sand. There was more time allowed for setting up operations, from Wednesday night to Sunday, but clearing out after the show in one day loomed large. Anyone familiar with the rush and madhouse conditions of setting up a major flower show will know what I mean. We do not have the man power for such a project nor the treasury to pay for having it done.

This original suggestion was turned down, even though highly desirable, and we settled for two 3 x 8 foot tables and some floor space. Several special meetings were held in addition to the regular bi-monthly ones. Each member was asked to submit a list of his best plants giving the name, diameter of pot or plant, and height of plant. At a special meeting the show committee (see next paragraph) had plans drawn up on which were drawn to scale those plants selected from the lists that seemed to best fit the spot. An effort was made to use some plants from each member so all would be participating.

Our Flower Show Committee appointed at the regular February meeting by Mr. Arthur Wells, Vice President, in the absence of President Elmer Rist were: Chairman, Mr. Jack Johnson, whom some of you met at the last convention in El Paso as one of our delegates, Mr. Arthur Fenton, and Mr. Malcom Martin.

A beautiful desert mountain scenery background twenty-four feet long by eight feet high, done in pastels was prepared by member Mrs. Martha L. Connell, of Wilmington, Delaware. A framework for the background was prefabricated by Arthur Fenton. The plant lists had been returned with the required plants checked so all was set for C and S day on Saturday morning at 10 o'clock.

Trying to get around piles of peat moss, bricks, crates, etc., past dump trucks, moving vans, trailer trucks, and station wagons from one end of the hall to the other in order to unload cartons of plants ranging from 12" pots and tubs down to 2" pots, was just part of the game. The background had been hung and the tables placed and covered the night before. Crushed granite chips were put on top of all pots—uniform appearance you know—which were then placed, replaced, and rearranged until all was finished by Saturday night. Jack Johnson printed the names on all the pots and Paul Shaw, of DuPont's Longwood Gardens, made a

final trip on Sunday morning to bring a few more large westerns for the floor. Colored pictures by the Wells' were rearranged by them later Sunday and several pictures taken, one of which is enclosed. All finished, complete, and ready for the public at noon Monday. First thing Monday morning President Rist got a call from the Horticultural Society people—the background is falling down. Mrs. Rist made a trip out only to find that a few more staples would do the trick. By the way a wooden fence was supplied by the Horticultural Society to keep long arms away and sticky fingers from latching onto some pot. Incidentally not one plant was lost.

Our exhibit was chaperoned most of the week by members who took turns on duty answering questions and encouraging new memberships. Great interest was apparent so an increase in attendance is expected at our April meeting.

Sunday the 18th at 8:00 A.M., found the first member packing plants and by noon the Flower Show was history for the Cactus Club. Now for the post-mortems. Just to make things more interesting a snow storm had started earlier which, by Monday morning, closed all schools, many industrial and business establishments, and halted traffic in the whole Philadelphia area.

Most of the plants exhibited were collected or came from Hummel's, Gates', or Johnson's. A few probably came from other dealers and some were home grown from seed. Rebutia, Echeveria, and Aloe were in bloom, also several Mams had rings of red seed pods—not many flowers at this time of year. Two tallest plants were 6 foot Euphorbia lactea and E. pseudocactus. Six 5-ft. Cereus peruvianus were on the floor. About twelve Ferocactus, Carnegiea, and other large round westerns were also on the floor to look down into. A card table held seedlings in various stages of growth, two dish gardens, and two grafts. Other plants include large and multi-headed Mams, Parodias, Notocactus, a fine six-inch Echinocactus grusonii, Stetsonia coryne, Haworthia truncata, H. limifolia, Agave victoriae-reginae, A. americana, etc., etc.

About 150 plants in all were used from eleven different collections not counting seedlings and dish gardens.

Free advice—if you like your hobby and your plants and don't mind working for them go into a flower show whenever possible. If you can't stand the hustle and bustle of a big undertaking stay out of it. The planning, differences of opinion, little irritations and inconveniences all add to the interest, depending upon how you take them.

MALCOM MARTIN
Publicity Chairman

THE MICROPUNTIAS

EDWIN F. WIEGAND, San Bernardino, California

Photos by author

Daston's description of the genus *Micropuntia* was incomplete as the flowers and seeds were not included. It was erroneous in claiming that the genus is free of glochids, and it was insufficiently detailed. Therefore my own observations may be of supplementary value.

Micropuntia: Flowers terminal, 1 or 2 per stem, $1\frac{1}{2}$ to 2 inches in diameter, petals about 15, rose-purple to pink. Filaments white, anthers yellow. Stigma lobes 5, pale cream to white. In general appearance the flower is similar to that of *Opuntia fragilis* except for the color of the petals which are yellow and the green stigma lobes for *O. fragilis*. Fruit becomes carmine

when ripe, drying early in the season to a pale tan papery capsule. The ovary is spiny, with the spines growing progressively longer and more numerous as the fruit ripens. Seeds $\frac{1}{4}$ inch in diameter, pale tan, shaped like a disc or old-fashioned round pill box. Roots highly succulent and very subject to rot when transplanted. The tap root is shaped like that of a carrot or parsnip. Stems are highly variable in size, shape, spininess and general appearance, depending on the species, of which there are at least fifteen.

Habitat Utah, Idaho, Nevada, Arizona and California.

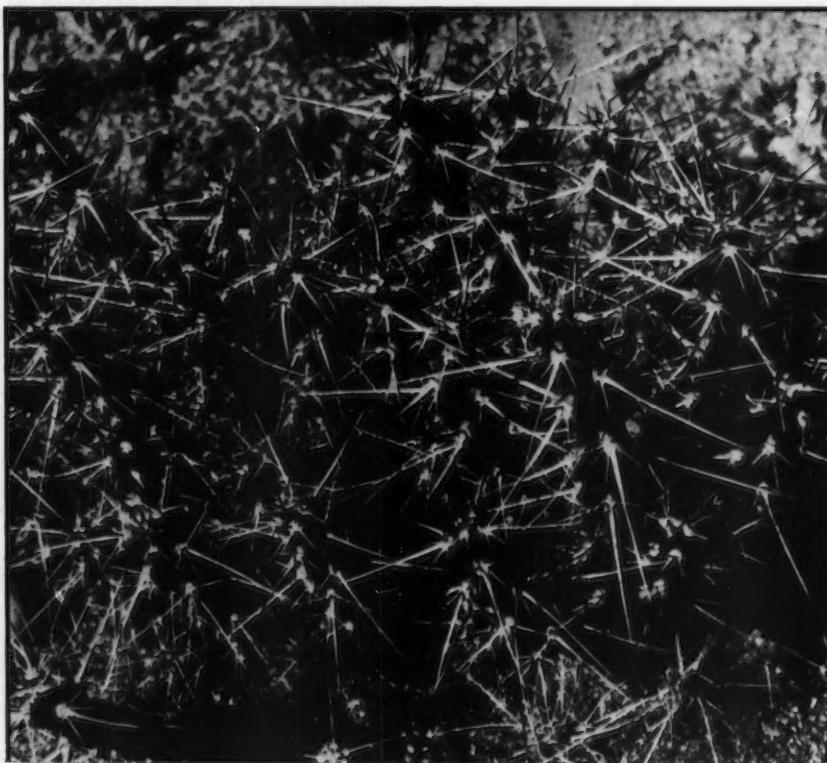


FIG. 53

Micropuntia #4, a California native. Stems spiny, slender and up to six inches long and about $\frac{3}{8}$ inch in diameter. The areoles project slightly from the surface of the stems. The spines are thin and flexible, 8 to 15 per areole, 1-2 inches long, various colors black to white. The areoles also produce glochids.



FIG. 54

Micropuntia #6. Southwestern Utah and northwestern Arizona. Flowers, fruits, and roots similar to those of the other *Micropuntias*. Stems however are different in shape and size. The stems are clavate, up to 1½ inches long and 1 inch in diameter, and are extremely knobby. Each knob is surmounted by a cluster of 8 to 12 spines up to 1 inch long. The scale of both photos is ⅓ of natural size.

EPIPHYLLUMS IN ENGLAND

By F. R. MCQUOWN

The Barn, 39 Farm Avenue, London

In England cacti are bought by large numbers of people of all ages, but they seem to have a special appeal to the young. Many children, and a fair number of teenagers, particularly girls, own a few specimens. It is however unfortunate that the culture of cacti is not very generally understood, and many of them die or fail to grow, and thus interest tends to disappear. The commonest fault is failing to water them, and since Epiphyllums are even less able than most cacti to withstand perpetually dry conditions, it is not surprising that comparatively few of them are grown.

Nevertheless, thanks to the efforts of enthusiasts, knowledge of the Epiphyllum is slowly spreading, and with it comes the realization that of all the plants in the world the Epiphyllum is probably far the best plant for room culture in England. In fact it is probably the only plant that produces worthwhile flowers year after year in the strange climate of the English living room.

As my readers will know far more about greenhouse culture of Epiphyllums than I do, I propose to describe room culture in England, and this would probably be applicable also to the Northern parts of the United States.

Our choice of varieties is rather limited, since exchange restrictions still hamper us in obtaining the best American varieties. Many of those we have are the result of diligent search in the kitchens of farm-houses and cottages throughout the land—I was lucky enough to have a "find" this summer. Most of them are red, and there are quite a number which resemble *Ackermannii*. There are one or two pinks, and one of these seems very close to the American variety *Padre*. There appears to be only one white, with a gorgeous scent, and we believe it to be *Cooperi*.

They seem to grow in almost any potting soil, but the best I have tried consists of a gallon of garden soil, a gallon of spent mushroom compost, a 2½ inch potful of bonemeal, and an egg-cupful of carbonate of

lime. The lime may seem rather odd, and is omitted by professional growers, but it is used by amateurs because the weather in England changes without warning, and the plants may thus have to stand in very damp soil for quite a time. The lime prevents the soil from going sour, and lime does not really seem to harm Epiphyllums. If no spent mushroom compost is available, any well rotted stable manure will do.

Potting is done in the Summer after the flowering period, and is usually needed only every second or third year. 4½ inch pots are usually amply big enough for flowering plants, though some people use up to 6 or 7 inch pots for large specimens. After that, it is better to split plants up rather than to go on to larger sizes. When splitting up, any pieces which have no roots will not make them from the brown underground part of the stem, so rootless pieces are cut up to make cuttings from the green parts of the stems.

No watering is done for a week after potting, but from then on water is given freely. When there is no longer danger of night frosts, the plants benefit greatly by standing out of doors. Provided flowering has finished, and provided newly potted plants are established, they are put out of doors from the middle of June till about the middle of September. They are best put in the shade for 3 or 4 days, and then should stand where they get the morning, but not the afternoon sun. The power of the sun in England is not enough to scorch the plants, but I should imagine that in the Northern parts of the United States they would want some shading.

Even in the porous earthenware pots that we use, I do not think that in the humid English climate the roots could ever become dry enough to be damaged; I have never known it happen. Nevertheless, for maximum growth the plants should be watered as soon as the pots seem to be getting dry. Earthworms damage the roots very considerably, and it is advisable to stand the pots on boards.

Slugs and snails are a great nuisance, but can usually be completely controlled by Metaldehyde bait strewn around the pots. Leaf-eating caterpillars must be kept at bay with 5% D.D.T. or B.H.C. dust.

About the middle of September the plants are moved indoors and stood in a light position near the window. If there are any wormcasts on the soil, watering with a solution of ¼ ounce of permanganate of potash in 10 (American) pints of water brings the worms to the surface when they can be picked off.

In a moderately warm room the plants usually flower a second time, and after that the water is reduced for the winter. The heating of English houses in the winter is exceedingly variable, and is generally considered primitive by American standards, and the weather is perhaps even more variable. It is thus difficult to give precise details of wintering the plants, but generally speaking the principle is to prevent frost getting to them, but to keep them fairly cool. Watering is based on giving enough water to prevent any shrivelling of the plants, but not enough to encourage growth when the light is not strong enough for

healthy growth to be made. Overhead spraying in mild spells during the winter sometimes solves the problem. If possible, a completely dry period for at least a month, usually January or February, seems to be advisable to give a winter rest. One very successful way of wintering is to put all the plants close together in an attic or cellar for all the cold months with no water at all unless it gets very warm. With this method the colder it is the better, provided of course that it keeps above freezing point.

About mid-March the plants are put in a light position, and they are watered in the same way as any other pot plant. Watering with weak liquid manure seems to promote bud formation, and I much prefer the synthetic kinds of manure with a phosphorous content at least equal to the nitrogen content to any of the natural kinds.

After the buds are about a quarter of an inch long one must be very careful not to move the plants or allow cold currents of air to blow upon them, or there will be great danger of bud-dropping.

This completes the cycle of operations, and it only remains to deal with cuttings and seeds.

Cuttings may be struck in June, July and August. Contrary to American practice, in England the best results seem to be obtained with cuttings about a foot long. Smaller pieces root, it is true, but take 4 or 5 years to flower. It is a good practice to dip the cut end of the cutting into Basic slag as soon as the cut has been made. There are two methods of rooting namely (a) leaving the cutting to dry in the shade for two weeks, then potting in sandy medium and watering at once, and (b) leaving to dry for 48 hours, planting in dry soil and not watering for 14 days. Both systems have their advocates, and I should not like to say which is better. Most people leave the cuttings in the cutting pots till the following summer, when the large cuttings can be put direct into 4½-5 inch pots and the smaller ones into 3½ inch pots.

In warmer countries it is usually advised to make the cut in the broad part of the stem, but in England rooting and subsequent growth seem to be just as good if the cut is made lower down in the narrow part, and as this probably means a longer cutting I usually make the lower cut.

Growing from seed is very tedious in England. I have tried all the 'dodges' using both home-saved seed and first class American seed, but if I can get about 3% of it to germinate in the first year I think I am very lucky, and some even seems to wait till the third season. Seedling growth is very slow indeed, so I am trying to speed it up by grafting, but I have not gone far enough with this to give confident advice as yet.

Such seedlings as I have brought to flower seem fairly promising, and I hope that before long we shall have a much greater range of varieties. However, we still have quite a way to go before the general public realizes what wonderful plants the ones we already have are. I have an idea that it will not be very long before they do so.

BLOOMING DATES OF CACTI AND OTHER SUCCULENT PLANTS

SEWARD, ALASKA

According to your request I am sending you my list of cactus and the times they have flowered. Those with no second date still contain buds, tho it is now too late for most of them to mature, but as before I expect some of the buds to carry over and bloom next summer.

Our home is T-shape, and the plants are kept in a plant room in the southeast corner of the T. The plant

room has glass on both sides from 24" from the floor to the ceiling, and the room is 6' by 12'. Two of the windows open for cross ventilation. The room is unheated, and during the winter the glass is covered with plastic so that the lowest temperature recorded has been 42 degrees. In the summer the sun gets to the plants from about 3 a.m. to 3 p.m., and in the winter from 10 a.m. to 1 p.m. Our weather is so damp that

my greatest loss is from rotting, but I am trying to control the moisture this year with a chemical, and already I can tell the difference on the moisture which collects on the windows. My greatest loss of flowers is from having a week of rain or fog at the time when the flowers are just ready to break into bloom, and consequently abort. None of those which habitually do this have been included in my report.

I have looked and looked to see if by any chance I could find any cacti or succulents native to Alaska and the closest I have come is the Crassulaceae, *Sedum rhabdiota* of which I now have two species growing in my garden. And one which looks as tho it should belong but I guess doesn't is the *Saxifraga tricuspidata*, also in my garden.

There are a great many cacti in my collection which are unnamed because friends and relatives have sent them to me from outside, and even tho some of these have bloomed, I have not included them in my list because I am not sure exactly what they are.

Zygocactus truncatus	Jan. 25-Mar. 21
Opuntia variegata	Feb. 26-Mar. 22
Lobivia breviflora	June 7-
Gymnocalycium damsii	June 14-
Notocactus ottonis	July 3-10
Gymnocalycium	July 3-
Echinocereus	July 12-
Lobivia aurea	July 18-
Parodia aureispina	July 18-Sept. 15
Notocactus-scopula	July 25-
Adromischus maculatus	July 27-
Astrophytum myriostigma	Aug. 29-
Mammillaria rhodantha	Aug. 15-
Haworthia fasciata	Aug. 15-
Coryphantha radians	Sept. 17-19
Stapelia variegata	Sept. 30-
Faucaria tigrina	Oct. 18-
Epiphyllum (Eden)	July 28-Aug. 10

ELsie WHITMORE

Record of blooming dates of cactus collection grown in Northwestern Pennsylvania, Warren County, Elk township community.

Astrophytum asteria	May and on
capricorne senile	Aug.-Sept.
myriostigma	All summer
myriostigma var. quadricostata	Sept.-Nov.
Ariocarpus fissuratus	Oct. '51 and Mar. '55
Epiphyllanthus microsphaericus	Aug.
Echinopsis kratochviliana	June
Euphorbia valida	Sept.
Fnestrelaria rhopalophylla	Spring to fall
Gymnocalycium damsii	May to late fall
friedericii	April-June
mihanovichii	April-Aug.
Kleinia pendula	Oct.-Nov.
Lophophora williamsii	Early spring
Mammillaria bombycinia	Jan.
elongata schmollii	Feb.-Mar.
zeilmanniana	Mar.
elegans	Jan.-Oct.
longicoma	Mar.
Coryphantha werdermannii	July-Nov.
Notocactus submammulosus	Dec.-Mar.
pampeanus	May
Parodia aureispina	Feb.-Mar.
Rebutia senilis	Mar.-Apr.
minuscula	Feb.-Mar.
violaciflora	Feb.-Mar.
kupperiana	Mar.-June
Setiechinopsis mirabilis	All summer (night)
Chamaecereus silvestrii	April
Echinocereus	April-May
Echinopsis (pale pink flower)	June
:white (flower)	All summer
Zygocactus truncatus	Nov.-April
Epiphyllum (red flower)	Mar.
Coryphantha (chartreuse flower)	July

MRS. GLEN N. ANDERSON
R. 1, Box 80, Russell, Penna.

FROM PENNSYLVANIA

When the weather warms up, sometime in May or early June, I take the cacti out doors, some on the porch, the rest on a table under lilac trees which shade them from noonday sun. A few I keep inside always, such as, "The Old Man" and other hairy ones. The plants outside are kept out as late as possible, until October. If weather gets too cool I cover with newspapers and plastic table cloth which has a few holes. During dry weather I water them but otherwise let Mother Nature do it. If she is too generous at times, I cover plants with plastic cloth till rains are over. Very seldom lose any plants from too much water.

When plants are brought in for winter I keep as many as possible upstairs where it's cooler than downstairs. Rebutias and Echinopsis are kept especially dry only giving a little water on sunny days. One Rebutia pup removed from Mother plant 2 years ago has had 18 flowers and there are 3 more buds coming now. My plants are kept in east, south and west windows. Have a small enclosed porch with 3 exposures where I keep as many plants as I can crowd in there. Soil is as sandy as I can make it, with good drainage. I have no special "recipe" for the soil. Elevation 2000 feet.

Have a few hardy Opuntias and possibly a "Coryphantha," which has lived through the winter out doors and look O.K. at the present time. Covered with snow, 5 and 10 below zero temperature didn't seem to damage them any. The "Coryphantha" bloomed last summer, yellowish flower at top of plant.

NOTICE TO AFFILIATES

The Cactus and Succulent Society of America, Inc., is happy to announce that we have a new set of slides to offer you for program material. Do not let the title confuse you. Except for only a few, these slides have never before been included in any of the slide sets. The slide sets available now are as follows:

Set No. 1—Cactus and other succulents Native to California (new set).
Set No. 2—Baja California, Mexico and So. America.
Set No. 3—Orchid Cacti and Miscellaneous Succulents and Cactus.

Set No. 4—Orchid Cactus—Donated by S. E. Beahm of Beahm Epiphyllum Gardens.

Slides will be loaned upon my receipt of a \$5.00 deposit which will be returned after the return of the slides to me.

MRS. MARY GLADE, Corresponding Secretary
7600 Verdugo Crestline Dr.
Tujunga, California.

TEXAS CACTI—Schulz and Runyon (1930)

Rare and only a few copies available. Out of print.
Used copies, \$5.00

ABBEY GARDEN PRESS
132 W. UNION ST., PASADENA, CALIF.

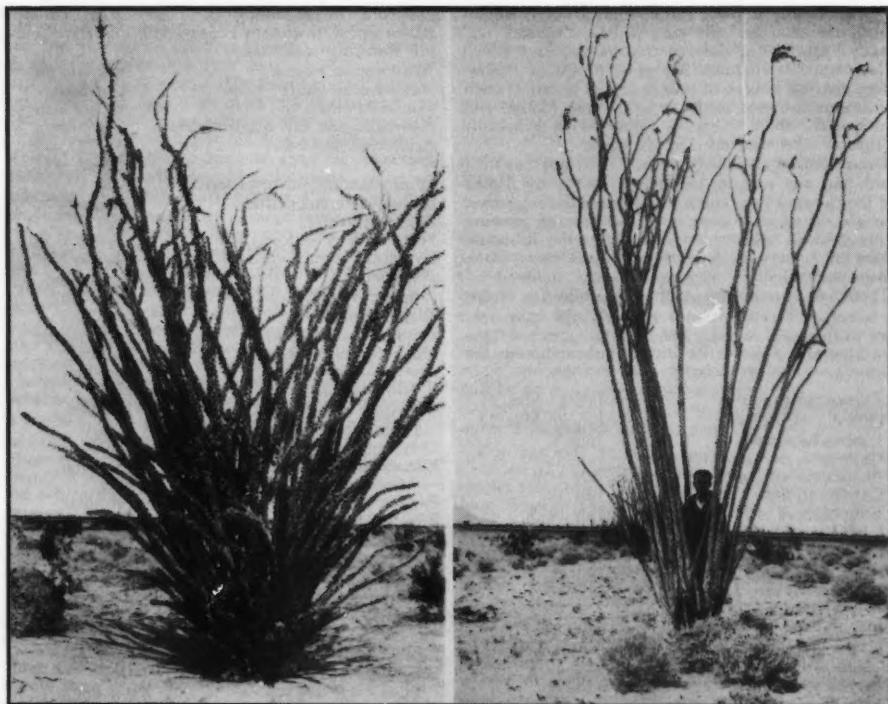


FIG. 55. *Fouquieria splendens* near Yuma, Arizona



FIG. 56. *Fouquieria peninsularis* of Baja California

A REVISION OF THE FAMILY FOUQUIERIACEAE

By GEORGE V. NASH

Reprinted from

Contributions from the New York Botanical Garden—No. 42, 1903.

During an attempt to identify one of the species of *Fouquieria* which flowered in the conservatories of the New York Botanical Garden during the past June, much confusion was found to exist, both in the identification of herbarium material and in the literature bearing upon this family. So great was this confusion that the writer was eventually compelled to extend his examinations beyond the point he had anticipated, and finally realized that a revision of the family was necessary before any definite results could be obtained. No recent treatment, involving a consideration of the species, could be found, and the apparent need of such work encouraged the author to enter upon the following revision, which, it is hoped, will throw some light upon an interesting family and one but little understood. As here regarded, it embraces two genera and seven species, three of which are here described for the first time.

The relationship of the family is rather puzzling, and a satisfactory solution of the difficulty has not as yet been proposed. By Bentham and Hooker (Gen. Pl. I: 161) it was made a tribe of Tamaricaceae, and the same treatment was accorded to it by Engler and Prantl (Nat. Pfl. 3: 298). Subsequently Engler (Nat. Pfl. Nachtr, 251) maintained that the family was better kept separate from Tamaricaceae on account of its oily endosperm and gamopetalous corolla. Its distribution would also tend to confirm this distribution of the group, for Tamaricaceae, with Fouquieriaceae removed, is strictly Old World, while Fouquieriaceae itself is confined to North America, and primarily to its arid regions.

While Engler changed the rank of this family, he indicated no change in its relationship. It is hardly within the scope of a revision of this kind to discuss at length a matter of this nature, but the strong resemblance in many ways to certain forms of the Polemoniaceae cannot be passed by without some comment. In this connection it is well to remember that it was in this family, as a *Cantua*, that the original species was published. The 3-celled ovary, the more or less united styles and the gamopetalous tubular corolla, to the base of which the filaments are slightly adnate, all markedly point in this direction. The spongy central column found in the

dehiscing capsules would indicate that the inner edges of the septa unite. A transverse section of the ovary made at this time, and before the septa break away from the walls, would much resemble the condition of things existing in the genus *Gilia*, also found in the same region. The general resemblance of the flowers to those of some of the large-flowered red *Gilias* is perhaps the most striking feature of the plants. It is true that the sepals in this are distinct, while in *Gilia* they are more or less united, but this is but one character weighing against many others. It would seem to me that the ovarian, placental, style and corolla characters indicate a strong affinity with that family, much stronger than with the Tamaricaceae, to which family, polypetalous in all its other forms as are its immediate relatives, the gamopetalous corolla of Fouquieriaceae does violence.

FOUQUIERIACEAE DC. Prod. 3:349. 1828.

Shrubs or trees, the trunks simple, columnar and stout, or much branched: branches spine-branching. Spines developed within the petioles of the leaves on the new growth and becoming apparent when these fall. Leaves with the blades flat, entire, or rarely obcordate or emarginate: those on the young growth petioled, the petioles from one half as long as to equalling the blade. Secondary leaves borne in fascicles in the axils of the spines and sessile or nearly so. Inflorescence spicate to paniculate, terminal. Flowers sessile or pedicelled. Calyx of five free imbricated sepals. Corolla yellow or red, hypogynous, the segments united for one half their length or more: tube cylindric, sometimes broadened toward the apex: lobes flat or concave, imbricated in the bud, incurved, erect, spreading, reflexed or enrolled. Stamens ten to fifteen, of unequal length, exserted from the corolla-tube, and adnate to it at the very base: filaments subulate, usually broadened and compressed dorsally at the more or less pubescent base where they are sometimes coherent, sometimes provided with a scale-like appendage near the base: anthers acute at the apex, cordate at the base, elliptic to nearly ovate, introrse, versatile, attached below the middle, 2-celled, the cells opening longitudinally. Ovary 3-celled, the inner edges of the septa united at the base

and at the very apex, free in middle, the septa finally uniting by the inner edges and breaking away from the walls, forming a central column attached at the apex and at the base. Ovules 4-6, in two rows, in each cell, borne on the edge of the free portion of the septa. Styles 3, slender or stout, included in or exserted from the corolla, united only at the base or for their entire length. Capsule dehiscing loculicidally, 3-valved, the valves thick and coriaceous. Seeds oblong, compressed, at first broadly winged, the wing finally breaking up into long filaments

Styles more or less united, but free at the apex, exserted, the column and branches slender: shrubs or trees with branching trunk; corolla red.

Styles wholly united, stout, short, included, forming a 3-angled stout body: tree with a stout columnar undivided trunk: corolla yellow.

1. **FOUQUIERIA** H.B.K. Nov. Gen. & Sp. 3:452. 1820.

Bronnia H.B.K. Nov. Gen. & Sp. 6:83. 1823.
Philetaeria Liebm. Vidensk. Selsk. Skr. V. 2:283.
pl. 1851.

Shrubs or trees with spicate or paniculate inflorescence and red sessile or pedicelled flowers. Sepals less than one half as long as the corolla-tube. Corolla red, cylindric to campanulate, the

Inflorescence corymbiform-paniculate.

Inflorescence conic to elongated paniculate, or spicate.

Corolla-tube cylindric, several times longer than the lobes.

Inflorescence spicate.

Inflorescence paniculate.

Filaments unappendaged: panicle conic to ovate: bushy shrubs or trees.

Corolla-tube 3-4 mm. in diameter: sepals oval: panicle-branches slender.

Corolla-tube 5 mm. in diameter: sepals orbicular: panicle-branches stout.

Filaments with a scale-like appendage near the base: panicle long and narrow: shrubs with long slender simple branches.

Corolla campanulate, the tube about equalling the lobes.

1. **Fouquieria fasciculata** (R. & S.)

Cantua fasciculata R. & S. Syst. 4:369. 1819.

Fouquieria spinosa H.B.K. Nov. Gen. & Sp. 3: 452. 1820.

Bronnia spinosa H.B.K. Nov. Gen. & Sp. 6:84.
pl. 528. 1823.

Cantua spinosa Willd.; H.B.K. Nov. Gen. & Sp. 6:84. 1823.

Echeveria paniculata Mocino & Sessé; DC. Prod. 3:350. 1828.

A tree 4 m. tall or more, with white fragile wood and round glabrous spiny branches. Leaves fascicled in the axils of the spines, obovate-oblong, rounded at the apex or sometimes emarginate, cuneate at the base, glabrous, shining, about 2.5 cm. long and 9-10 mm. wide: panicle terminal, corymbose, much-branched, its branches glabrous: capsule about 1 cm. long:

similar to those on the body of the seed. Albumen thin, oily. Cotyledons flat, oblong to ovate, cordate at the base. Radicle short.

Genera two, both natives of Mexico, one, *Fouquieria*, also found in the adjacent parts of the United States. The *Idria* of Kellogg is often united with *Fouquieria*, but it seems more natural to keep it separate, both on account of habitat characters and differences in the flowers. The short stout included styles united for their entire length, yellow flowers and columnar, normally unbranched trunk, justify this treatment.

Styles more or less united, but free at the apex, exserted, the column and branches slender: shrubs or trees with branching trunk; corolla red.

1. *Fouquieria*.

2. *Idria*.

Segments united into a tube for one half their length or more, the tube sometimes gradually enlarged toward the apex: lobes from erect to recurved or enrolled. Stamens ten to fifteen, more or less broadened and compressed dorsally at the pubescent base. Styles slender, exserted, united only at the base, or nearly to the apex.

Species six; Mexico and the adjacent parts of the United States.

1. *F. fasciculata*.

2. *F. formosa*.

3. *F. Macdougalii*.

4. *F. peninsularis*.

5. *F. splendens*.

6. *F. campanulata*.

sepals nearly orbicular, about one fourth as long as the capsule: seeds oblong, compressed, the margin membranous-winged, the inner surface concave, the outer convex, brown, glabrous, the wings nearly entire, emarginate at the apex and at the base; episperm thinly membranous, adhering to the endosperm which is thin and fleshy; embryo included, straight, almost as long as the endosperm, compressed; cotyledons leafy, ovate, obtuse, cordate at the base, fleshy; radicle cylindric, somewhat acute, one third as long as the cotyledons.

The above description is drawn from the original in the work of Humboldt, Bonpland and Kunth, cited above. I have seen no specimens of this species, but its corymbiform panicle is unlike that of any of the others. The type

material was in fruit only, and was secured at Puente de la Madre de Dios, at an altitude of about 5,280 feet. This place is somewhere in the neighborhood of Mexico City or Actopan, but it has not been possible for me, up to the present time, to locate it more definitely.

It is interesting to note here that this is the type of *Fouquieria*, a monotypic genus at that time, which was based on *Cantua fasciculata* R. & S. (although H.B.K., for no apparent reason, credited it to Willdenow). Subsequently *Fouquieria* was again published, this time being based on an entirely different plant, *F. formosa*, and at the same time *F. spinosa*, alluded to above, was made the type of the new genus *Bronnia*. The genera are, therefore, synonymous, *Fouquieria* taking precedence on account of the priority of publication.

2. FOUQUIERIA FORMOSA H.B.K. Nov. Gen. & Sp. 6:83. pl. 527. 1823.

Echeveria spicata Mocino & Sessé; DC. Prod. 3: 349. 1828.
Philetaeria horrida Liebm. Vidensk. Selsk. Skr. V. 2:283. pl. 1851.

A branching shrub 2-3 m. tall, with a racemose inflorescence and large red flowers. Leaves on the new growth 3-4 cm. long, petioled; petiole about one half as long as the blade; blade 2-2.5 cm. long, 10-13 mm. wide, elliptic, apiculate, cuneate at the base: fascicled leaves in the axils of the spines smaller, sessile or nearly so, elliptic, 1.5-3 cm. long, usually less than 1 cm. wide, rounded at the apex, cuneate at the base: spike 1.5 dm. long or less, the flowers ascending: sepals red, 8-11 mm. long, broadly oval to orbicular: corolla red, the tube a little curved, cylindric, about 2 cm. long and about 7 mm. in diameter, the lobes spreading or reflexed, orbicular, abruptly acuminate, 6-8 mm. long: stamens exserted, unequal in length, sometimes twice as long as the corolla, the filaments a little broadened and compressed below, glabrous at the base, then pubescent for a short distance with long ascending hairs, the remainder of the filament glabrous, the anthers oblong-ovate, cordate at the base, acute at the apex, 5-6 mm. long: styles united except at the apex, shorter than the longest stamens, the divisions 3-5 mm. long.

Southern Mexico.

Specimens examined.—Jalisco: Guadalajara, Pringle 2420, 1889. Puebla: Tehuacan, Pringle 6296, 1895. Mexico: Chiquihuite, Bourgeau 1120, 1865-6.

This is quite distinct from any of the other species in its spicate inflorescence. The exact locality from which it was originally secured is

not indicated. The specimens cited above would point to the southern part of Mexico as its home. *Philetaeria horrida* Liebm. was obtained in valleys at an altitude of 1500-1800 meters, in the district of Tehuacan, State of Pueblo, from which place Pringle also secured the same plant many years later. Liebmann's excellent plate and description leave no doubt as to the identity of his plant with the one of H.B.K.

3. FOUQUIERIA MACDOUGALII sp. nov.

A much-branched tree, reaching a height of 7 m. and a trunk diameter of 1-2 dm., with bark yellowish green on the trunk and brown on the spiny branches, the spines 1-2 cm. long, and terminal slender panicles of few bright red flowers. Leaves on the new growth 6-8 cm. long, petioled; blade 3.5-4 cm. long and about 1 cm. wide, acute at the apex, and rather abruptly narrowed into a petiole of the same length: fascicled leaves in the axils of the spines gradually narrowed into a sessile base, 3.5-4 cm. long and about 1 cm. wide: panicle slender, 7-10 cm. long, its delicate simple branches widely spreading, the lower ones 3-4 cm. long and bearing 2-4 flowers on slender pedicels which are 1-2 cm. in length and abruptly thickened at the apex: flowers few: sepals broadly oval, about 6 mm. long, the outer two acute, the inner three rounded and apiculate at the apex: corolla about 2.5 cm. long, the tube cylindric, 3-4 mm. in diameter, the lobes broadly ovate, erect, acute; about 5 mm. long: stamens 10, exserted, the filaments red above, white below, broader and dorsally compressed near the base, the interior surface of this compressed portion glabrous, the exterior surface pubescent with long stout hairs which gradually increase in length upward and extend but a short distance on the rounded part of the filament which is glabrous to the summit, the anthers 2-3 mm. long: styles exceeding the stamens, united almost to apex: capsule about 2 cm. long.

Type specimen from living plants, collected at Torres, Mexico, in 1902, by MacDougal, no. 28, which flowered in the conservatories of the New York Botanical Garden in June, 1903.

Sonora and Sinaloa.

Specimens examined.—Sonora: Rayon, Thurber 952, 1851; Torres, MacDougal 28, 1902; Alamos, Palmer 306, 1890; Granados, Hartman 226, 1890. Sinaloa: Culiacan, Palmer 1804, 1891.

This plant was first secured by Thurber at Rayon, about eighty miles north of the place where it was recently obtained by Dr. MacDougal. Thurber's plant was distributed as *F. spinosa*, from which it differs materially. It

is evidently, however, the plant referred to under that name in the preface to Gray's *Plantae Novae Thurberianae* (Mem. Am. Acad. Arts & Sci. II. 5:303). His description of this tree agrees with a photograph of one made by Dr. MacDougal. The trunk arises from the ground for two or three feet, and then divides into crooked branches, the ultimate divisions of which are pendulous.

4. *Fouquieria peninsularis* sp. nov.

Bronnia spinosa Benth. Voy. Sulph. 16. 1844.
Not H.B.K. 1823.

A shrub 2-3 m. tall, with a conic panicle and red flowers. Leaves on the new growth 5-6 cm. long, petioled: petiole about 3 cm. long, about as long as the blade: panicle conic, 1.5 dm. long or less, its branches ascending, stout, the lower ones sometimes 4-6 cm. long and usually divided, bearing 2-4 flowers on the ultimate divisions in a rather crowded manner, on short stout pedicels usually less than 5 mm. long: sepals orbicular or nearly so, 5-6 mm. long, apiculate, reddish: corolla red, the tube slightly if at all curved, about 1.5 cm. long and 5 mm. in diameter, the lobes erect or nearly so, orbicular, acute, 5-6 mm. long: stamens exserted, unequal in length, the filaments broadened and compressed at the base, the inner surface of the compressed portion glabrous, the outer surface pubescent with long ascending hairs, the remainder of the filament glabrous, the anthers 3-4 mm. long: styles united except at the apex: capsule fully 2 cm. long.

Lower California and western Sonora.

Specimens examined.—Lower California: La Paz, Maj. W. Rich, Dec. 11, 1847 (type); Turtle Bay, Anthony 144, July-Oct., 1896; San Bartolome Bay, Chas. F. Pond, March, 1889; Calmalli, Purpus 141a, Jan.-March, 1898; Cape San Lucas, Xantus 38. Sonora: Guaymas, Palmer 266, 1890.

Related to *F. splendens*, but distinguished by the absence of the appendage at the base of the filaments, the more open panicle and the larger capsule.

I have ventured to identify the *Bronnia spinosa* of the Voyage of the Sulphur with this plant, as I have seen material from Cape San Lucas, the place from which that plant was secured. The type of this species was secured at La Paz, only about ninety miles north of Cape San Lucas. Bentham describes the filaments as glabrous, a condition unknown in the genus so far as I have examined it. Otherwise his description agrees well with this plant, and as the filaments are pubescent only toward the base the pubescence might readily be overlooked.

5. *FOUQUIERIA SPLENDENS* Engelm. in Wisl. Mem. Tour Mex. 98. 1848.

Fouquieria spinosa Torr. in Emory, Mil. Recon. 147, pl. 8. 1848. Not H.B.K. 1820.

A branching shrub, the long slender branches arising from near the base, sometimes to a height of 4-6 m., with a narrow paniculate inflorescence and red flowers. Leaves of the new growth 3-5 cm. long, petioled; petiole about one half as long as the blade; blade 2-3 cm. long, 5-7 mm. wide, narrowly elliptic to lanceolate, acute at the apex, narrowed at the base: fascicled leaves 1-1.5 cm. long, 5-8 mm. wide, narrowly obovate to obovate: panicles narrow, solitary or several at the apex of the stem, 5-20 cm. long, the branches usually short and with the few flowers crowded: sepals broadly oval to nearly orbicular, 5-8 mm. long, obtuse or rounded at the apex: corolla red, the tube straight, 15-18 mm. long, gradually a little enlarged toward the apex, 4-5 mm. in diameter at the middle, the lobes spreading and recurved or enrolled, broadly oval to orbicular, obtuse at the apex or sometimes apiculate, 4-5 mm. long: stamens exserted, unequal in length, the filaments broadened and dorsally compressed at the base, the compressed portion running out laterally into a scale-like appendage which is pubescent on the upper surface and 0.5-1 mm. long, the inner surface of this broadened portion glabrous, the outer surface pubescent with long stout hairs, the remainder of the filament glabrous; anthers about 4 mm. long, oblong, abruptly acute, cordate at the base: styles more or less united; only toward the base, or nearly to the apex: capsule 1-1.8 cm. long.

Western Texas and northern Mexico to southern California and northern Lower California.

Specimens examined.—Texas: El Paso, G. R. Vasey, May, 1881, and L. H. Dewey, June 15, 1891; Wright 228, October, 1849. Mexico: Chihuahua and Sonora, Thurber 401, May, 1851; Coahuila, Palmer 80, 1880; San Pablo, Gregg, April 30, 1847. New Mexico: Grant Co., Mearns 46, 1892; Little Mt., near Las Cruces, Wooton, May and July, 1893. Arizona: Tucson, Toumey, April 20, 1894; Tucson Mts., Toumey 465, 1892; Willow Springs, Jones, May 29, 1890; Gila Valley, Rothrock 319; foothills, Pringle, April 6, 1891; San Francisco Mts., Wheeler, 1872; Squaw Peak, Mearns 173, May 6, 1887; Ft. Huachuca, Wilcox, June 1, 1892, and 106, 1894. California: Emory, November 29, 1846; Fremont, 1849; The Needles, Jones 3831, May 6, 1884; southern California, Parish. Lower California: Rosario, Orcutt 1354, May 1, 1886.

This species has a much more extended range

than any of the others and is the only one found within the confines of the United States. It may be distinguished at once from narrow-paniced forms of *F. peninsularis* by the prominent appendage near the base of the filaments and by the larger capsule. It has a number of common names, among them being Ocotillo, Coachwhip, Vine-cactus, and Jacob's Staff.

6. *Fouquieria campanulata* sp. nov.

A woody plant with narrow panicle and red campanulate flowers. Leaves on the new growth 3-4 cm. long, petioled; petiole less than one half as long as the blade, which is 2-3 cm. long and 4-5 mm. wide, narrowly oblong or lanceolate; fascicled leaves 2-3 cm. long, 3-6 mm. wide, lanceolate, acutish, narrowed to the sessile base: inflorescence a narrow panicle 1.5 dm. long or less, the branches short and spreading and the flowers on them crowded: sepals broadly oval to orbicular, 5-6 cm. long, pale: corolla, from the tip of the recurved spreading lobes to the base of the tube, 12-14 mm. long, campanulate, the tube, which is about as long as the lobes, 3 mm. broad at the base, enlarging to the summit where it is 5-6 mm. in diameter: stamens exerted, unequal in length, the filaments broadened and compressed at the base, the broadened portion running out into a spreading or reflexed scale-like appendage which is pubescent on the upper surface and about 0.75 mm. long, the inner surface of the compressed portion glabrous, the outer surface pubescent with long hairs toward the summit, the remainder of the filament glabrous, anthers ovate-elliptic, cordate at the base, acute at the apex.

Durango.

Specimens examined.—Santiago Papasquiaro, Palmer 87, 1896.

An exception in the genus in having campanulate flowers. This and *F. splendens* are the only species which have well-developed appendages toward the base of the filaments.

2. *IDRIA* Kellogg, Hesperian, 4:101, pl. 1860

Trees with a stout columnar trunk from which arise short spreading spiny branches. Inflorescence paniculate, arising from the apex of the trunk, the flowers rather crowded and almost sessile upon the ultimate divisions of the panicle. Corolla yellow, campanulate, the lobes orbicular, concave, incurved, shorter than the tube. Stamens 10, adnate at the very base to the corolla-tube: filaments pubescent below. Styles short, thick, united their entire length, but little longer than the ovary, forming a stout 3-angled body, the angles rounded.

Species one; Lower California.

1. *IDRIA COLUMNARIS* Kellogg, Hesperian, 4: 101. pl. 1860.

Fouquieria columnaris Kellogg; Curran, Bull. Cal. Acad. Sci. 1:133. pl. 1885.
Fouquieria gigantea Orcutt, West Am. Sci. 2:48. 1886.

A tall tree with a tapering trunk up to 3-4 m. in height or even taller, and a diameter at the base of about 3 dm. or more, from which arise the short spreading spiny and leafy branches. Leaves of the new growth unknown: fascicled leaves 1.5-2 cm. long and 5-8 mm. wide, lanceolate to narrowly obovate; panicles 3-4 dm. long, flowers rather crowded and nearly sessile upon the ultimate divisions: flowers, including the exerted stamens, 12-14 mm. long: sepals orbicular, about 4 mm. long: corolla yellow, 6-7 mm. long: stamens exerted, the filaments pubescent below, the anthers about 3 mm. long: styles about 2 mm. long, thick.

Lower California.

Specimens examined.—Rosalia Bay, Anthony 120, July to October, 1896.

Originally collected by Dr. Veatch near the Bay of Sebastian Viscaino, on the mainland east of Cedros Island. The tree was described by Dr. Kellogg as spineless, but this must have been an error, as others who have visited the same region remark upon the long spines which are found on the short branches arising from the trunk. Moreover, a specimen in the herbarium of the New York Botanical Garden, collected by Anthony at Rosalia Bay, but a few miles north of the original station, shows these spine-bearing branches, the spines being similar to those occurring in the other members of this family. Dr. Kellogg describes the trunk as undivided, while Orcutt, in the description of his *Fouquieria gigantea*, states that the trunk branches above the middle, sending up a few simple branches to nearly the height of the main stem. Brandegee, in his account of a collection of plants made in Lower California in 1889 (Proc. Cal. Acad. Sci. II. 2:132, 133), also refers to this branched condition, but considers this state as exceptional and due to accident or injury. Both Brandegee and Orcutt claim the trunk attains a height of fifty feet or more. Brandegee remarks that the old capsules are 8-10 mm. long and sessile in the panicle, and that the trunks are 6-9 dm. in diameter at the base, gradually tapering upward into a pointed apex, so that the general shape is much like that of an inverted carrot.

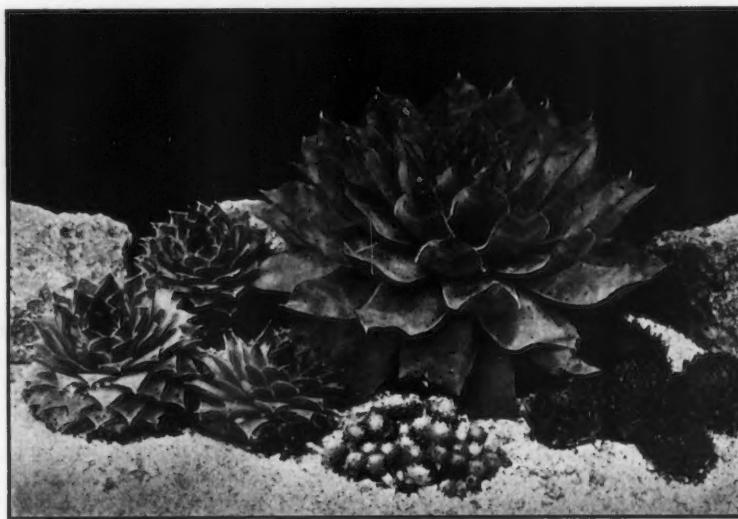


FIG. 57. (Left) *Sempervivum tectorum* var. *calcareum*. (Large plant) *S. calcaratum*. (Small plant) *S. arachnoideum*. (Right) *S. montanum*, all $\frac{1}{2}$.—J. R. Brown photos from "Succulents for the Amateur"

Sempervivums - Hen and Chickens

By C. W. Wood

There are at least two ways of getting pleasure out of sempervivums, hens-and-chickens or houseleeks, as you prefer: One from the standpoint of the collector, and the other from that of the gardener. That there is pleasure to be had from them—pleasure of high degree, in fact—will be apparent after you get your first houseleek, study its many intriguing facets, and use it in felicitous surroundings in your garden. Either approach will, I think, lead to one of the most entrancing hobbies in gardening. First of all, though, to get your feet in firm ground, let us examine a few of the aspects of the genus as they appear to the botanist.

Your very first impression, after you commence to investigate the subject will be, and rightly so, that confusion reigns supreme in the naming of the plants. That is not to be wondered at, either, because even the best authorities are at wide variance in their conclusions. Thus, the *Cyclopedia of Horticulture*, the bible of many American gardeners, tells us there are "about 63 species in the mountains of the Old World," while Praeger, a recent monographer of the genus admits only about half that number of distinct kinds. One is not surprised then to find confusion in gardeners' interpretations of the different kinds.

The best advice, I believe, to anyone with an awakening interest in sempervivums is to tell them to disregard names, unless the vendor is known to be an authority on the plants, and rely more upon sight or careful description in choosing one's purchases. Although that might work a hardship on a few careful commercial growers, it would work to the advantage of specialists like MacPherson Gardens, where such meticulous care is taken to have everything right. If plants are bought on appearance or careful descriptions, there will be far less duplication and, therefore, far more pleasure for the gardener.

The idea expressed by many unthinking gardeners that all sempervivums look much alike has no doubt had some influence in giving the plants a poor reputation in some quarters; actually, nothing could be farther from the truth, as you will see by examining a representative group. There you will find a greater diversity in leafage, including size, shape and coloring, and size and shape of rosette, as we shall see later. At one time, there were more than 300 distinct kinds in this garden (mostly seedlings to be sure)—but not distinct because of the presence or absence of a few hairs on leaf or stem, which is often made the basis of a botanist's decision,

but easily distinguished, and consequently usable for different purposes in the garden.

Their differences lay in size of rosette (from the tiny cobwebbed *S. fauconnetii* to the *S. tectorum* forms known in gardens as "Atroviolaceum", with rosettes ten inches or more across, and an all-green form, under label of Emerald Giant, which I saw some time ago, growing in rich soil in part shade, that was close to fifteen inches across), color of leaf (and endless variations in greens, reds, purples and intermediate shades and combinations), shape of leaf and rosette, and many other characteristics which make plants exactly suited to certain situations and associations. Nothing could be farther from the truth, then, than the assumption that all sempervivums are much alike, and one can enter the pleasant task of collecting them with the assurance their great dissimilarity will provide many a happy moment in the years to come.

At the very outset, though, one should disabuse his mind of any idea that the plants can get along with grace on next to nothing in the way of care. There is evidence in the literature to support the statement that "it is difficult to kill them," but there is a vast difference in the amount of satisfaction one can get from a well-cared-for plant and from another which is merely holding on to life by a slender thread, starved for food and moisture, and shrivelled under a scorching sun. There are exceptions, to be sure, as in the easier forms of the cobweb (*S. arachnoideum*) group, whose protection of cobwebs permit them to thrive in depressions on limestone rocks, with little or no soil; but generally speaking, best garden effects are obtained when the plants are grown in fairly rich soil and do not suffer for moisture.

The matter of sun or shade is another controversial point in their culture, and is no doubt to be answered largely by local conditions. In this northern garden, with its sandy soil, we found that most kinds, especially those with large colored rosettes, were better for some shade. The best way to answer this question to your own satisfaction is to make trial plantings in full sun and in varying degrees of shade, as well as in rich soil, noting the reactions of the plants to the different environments. They will not tell lies!

I am of the opinion that the many statements in garden literature which tell us of the indestructible nature of sempervivums, of how they thrive on neglect, and others in a similar vein, have contributed much to the neglect of the genus. Another factor in the unfortunate chain of circumstances has been the disregard of their landscape value, due, no doubt to the regrettable practice of growing them in holes bored in kegs

or barrels, which remind one of an anemic hedgehog. Others seem to think that their only place is in dish gardens, a use which may be well enough as far as it goes, but a most unnatural place for a plant which is used to the pure air of high European mountains.

Rightly placed in the garden, especially the rock garden, I know of no more important contributor of year-round interest and beauty. When the dull season overtakes one's alpine plantings, as it surely will in midsummer, the colored rosettes of many of these plants will often be the only bit of color to be found, especially if one is a Simon-pure alpinist, and eschews annuals as being unfit for his mountain plantings. And then in winter, when many of one's treasures have retreated below the ground for their long rest, the sempervivums will be there to cheer one through the dreary months.

Ways to use the plants in the garden are quite without number, making a story far too long to tell in detail here; so let us limit the remarks to a few generalities which will bring out their versatility. The kinds with small rosettes, of which *Sempervivum montanum* in most of its forms, *S. dolomiticum* and *S. pumilum* (I am following Praeger's naming as far as possible) are examples, are especially effective when planted in vertical crevices in wall or rock garden, at the top of a wall or steep slope, or on a level surface near the line of vision. There are several reasons for these arrangements which will become apparent at the first trial.

Thus, I recall a planting in this garden years ago in which *S. montanum* grew on the north side of the pool; planted on the very brink, it had in a few years extended its mats of small, dense, hairy rosettes at least eighteen inches down to the water level, covering a large area of the pool's cement side with a pleasing mantle of dark green. Or again: two or three plants of *S. stiriacum*, which is little more than *S. montanum* doubled in size of rosettes, with its leaves tipped reddish-brown, placed at the top of a perpendicular rock face, completely obliterated the stone in a few years.

According to my way of thinking, the large rosetted kinds with colored foliage, like the many varieties of *S. tectorum* and the plant known as "rubicundum," which is a form of *S. sclebanii*, are best in rich soil in part shade. There, many of them assume noble proportions and retain their rich coloring, which, incidentally, is largely lost when they are baked under the hot summer sun. Some gardeners, like the late M. Correvon, complain that they then lose "their natural character," but most will agree with the gentleman just quoted that they are "nice garden ornaments."

The kinds with cobwebs over their rosettes are the only ones that are likely to cause the gardener worry. They want perfect drainage at all times. If one is gardening on heavy soil, perhaps the best place for these high alpines is in a dry wall or vertical crevice in the rock garden. Notwithstanding the fact that they are "the most alpine of all" sempervivums, they can stand more baking than most others. That suggests, in addition to the foregoing situations, planting in depressions in rocks, even in little soil. The *arachnoideum* forms are reputedly lime haters, but we found in our trials that most, especially the hybrids like "Fauconnetii," "piliferum," "pilosella," "penicillatum" and "Mettenianum," were quite satisfied with a hole gouged out of limestones.

Considering the amount of confusion that exists in the naming of sempervivums, it is doubtful that anything of much value can be said along that line. Yet, the collector of houseleeks would be completely lost without some sort of guide. With not a little trepidation, then, and a fervent prayer, I shall try to give my interpretation of the names most often met with in gardens.

Sempervivum tectorum covers a vast amount of material, ranging all the way from a large, all-green form, which is probably true *tectorum*, to the tiny one known in gardens as "*S. minutum*." The ones that please me most are: A form with medium rosettes and year-round red leaves, known in gardens as "*tectorum rubicundum*" (not true *rubicundum*, of course, for that is a synonym or a form of *S. schlebanii*); *S. calcareum* (incorrectly listed as *S. californicum* by some growers), with lovely jade-green rosettes, each leaf tipped conspicuously with brownish-purple (a diminutive form of *calcareum*, which we once had under label of "*S. greeni*") is a lovely landscape houseleek and a rare one, for I have not been able to find it again); "*juratense*," large rosettes of red-brown and green; "*lamOTTI*," a large, showy one with green leaves, tipped red; "*robustum*," a spectacular plant, each large leaf being glaucous-purple at the base, then red, and ending in green; and "*S. triste*," which Praeger does not mention, appears to be a small *tectorum* with deep red leaves.

The kinds with small or medium-sized rosettes are my favorites for landscape use. Among them are *S. montanum*, which was mentioned before, and its form "*braunii*," a whitish-flowered form of the violet-purple type; "*burnatii*" (a large *montanum*); "*pallidum*" (large rosettes with red-brown edges on leaves); "*flagelliforme*" (small rosettes, spread around the parent on very long stolons), and "*stiriacum*" (described before).

The marriage of *S. montanum* and *S. tec-*

torum has given us several children, including "*S. rhaeticum*" with rosettes a little larger than *montanum*, quite tomentose leaves, and a tuft of white hairs at each leaf-tip. Another marriage of *S. montanum*, this time with *S. wulfenii*, produced three or four children that are nice to have around. Here, we liked the one called "*huteri*" very well, because of his fuzzy, widespread leaves, though the one known in gardens as "*theobaldii*," which shows its parentage in about 50-50 proportion, is not far behind.

Two more with medium-sized rosettes should be mentioned before closing these remarks. One is "*funkii*," which is said to be a triple hybrid, is a most pleasing little waif, clothing any unconsidered spot with a mantle of small, green rosettes—not especially showy, but always on his good behavior, and always presentable. Little need be said about the other, "*soboliferum*," the plant from which the common name, hen-and-chicken, came. For its associations and for its habit of the chicks rolling away and taking root wherever they stop, it should be in every collection. But it also has definite landscape value which will repay for the space it takes. There are at least three form in gardens, differing only in size of rosette, and running all the way from an inch across to one that is four inches or more.

The cobwebs are all fascinating, delighting even the jaded gardener with their simulation of a spider's industry. Here, too, we find much variation, for the plant has not only changed its shape, size and amount of silky raiment as it wandered over the mountains of Europe, but it has taken several mates during its travels, and their children are as charming as the parents. No cobweb that you can get will fail to please you, be it type *S. arachnoideum*, with half-inch, dense rosettes; *S. tomentosum*, with flat rosettes that are quite hidden under a dense, white web; *S. hookeri*, a very small, neat form; or any of the ones mentioned in a previous paragraph.

To sum up in one sentence this gardener's impression of sempervivums: They can easily be made the most absorbing experience in one's gardening life.

MACPHERSON GARDENS
2920 Starr Ave.,
Toledo 5, Ohio



AN APOLOGY

A year ago when Lad Cutak announced that his book was being published we gave members a chance to order advance copies. When the book orders were eventually filled we neglected to first ask if the order was still effective. No wonder some had forgotten about the order of so long ago. If we neglected to send the book to others who had requested it, please advise us. Next time we will get confirmation on delayed orders.—SCOTT HASELTON

FLOWERING DATES OF CACTI AND OTHER SUCCULENTS

January 2, 1956

In accordance with your suggestion of a year ago, I have kept a record of the blooming dates of a number of my cactuses and succulents, and am sending them to you for what they may be worth.

My cactus collection is slightly over two years old, and includes more than 325 varieties, a few growing out of doors, but about 290 in my greenhouse. Something is in bloom most of the time, but I have tabulated *only* those that I have purchased from either Mr. Johnson of Paramount, or Mr. Gates,—and that have come to me presumably correctly labeled. This applies also to the succulents I have listed. Many of my cactus plants are young and probably blooming for the first time, and for that reason the blooming period may be shorter than would be expected of an older plant.

My cactus plants are having to endure more humidity than they should have, as I am growing orchids, anthuriums, etc. in the same greenhouse. So far the cacti seem to be flourishing, and developing in a normal manner. I water them less than I would in a drier atmosphere, and this summer hope to have a lath house for them.

I hope these lists will be of interest to you. I have enjoyed keeping the record, and think I shall continue to do it.

SUCCULENTS—47 VARIETIES

January
 2—*Haworthia setata*—again in April
 3—*Echeveria derenbergii*
 10—*Echeveria agavoidea*
 13—*Pachyphytum brevifolium*—again 12-20
 15—*Echeveria pulvinata*
 21—*Pachyphytum compactum*—again 3-10
 February
 12—*Aloe variegata*
Echeveria "Violet Queen" (Hybrid)
 16—*Crassula dregeana*
 27—*Crassula telephiastrum*—also 3-24, 4-27, 5-6,
 5-14, 6-10, 8-11
 March
 19—*Anacampseros buderiana*—also 6-19, 8-12
 20—*Cyanotis somaliensis*
 April
 19—*Gasteria maculata*—again 12-9
 May
 5—*Adromischus festivus*
 11—*Anacampseros albissima*—again 12-31
 12—*Adromischus clavifolius*
 June
 25—*Faucaria haagei*
 July
 2—*Crassula hemisphaerica*
 10—*Crassula triebneri*
 15—*Crassula albissima cornuta*
 17—*Stapelia cooperii*
 20—*Crassula deceptrix*
 August
 11—*Pleiospilos simulans*
Tradescantia navicularis
 14—*Rochea falcata*
 29—*Dinteranthus puberulus*
 September
 1—*Euphorbia tubigera*
 5—*Conophytum biloba*
 15—*Adromischus cristata*
 18—*Euphorbia susannae*
 October
 5—*Conophytum meyerae*
Lapidaria margaretae
 6—*Lithops aucampiae*
 10—*Euphorbia obesa*
 22—*Euphorbia grandicornis*

23—*Faucaria tuberculosa*
 25—*Conophytum giftbergensis*
 26—*Argyroderma octophylla*
 November
 1—*Faucaria tigrina superba*
 2—*Anacampseros filamentosa*
 4—*Conophytum multipunctatum*
 December
 2—*Crassula pseudolycopodioides*
 4—*Euphorbia virosa*
 10—*Crassula perforata*
 15—*Crassula mesembryanthemopsis*
 17—*Euphorbia fimbriata*
 23—*Euphorbia caput medusa commellina*

I have not given length of bloom for these as many bloom for so long a time that I forget to notice just when they are finished.

CACTI—72 VARIETIES

	Each bloom
January	
1— <i>H. hahniana</i> , from 11-5 to 3-25, again started 10-31	5 days
<i>M. heyderi</i> , from 12-29 to 2-23, again 12-27	
<i>M. plumosa</i> , from 11-18 to 2-13, again 11-4	5 days
2— <i>M. microhelia</i> (pink flowers) to 3-21, again 12-29	7 days
<i>M. werdermanniana</i> to 3-3	
10— <i>M. bombycina</i> to 3-5, again 11-29	5 days
26— <i>M. microhelia</i> (yellow flowers) to 4-3	9 days
28— <i>Stenocactus anfractuosus</i> —1 bloom	10 days
February	
2— <i>Notocactus hasselbergii</i> additional blooms 3-12, 4-20, 5-7	14 days
8— <i>M. bocasana</i> , to 3-7, again 6-11, 7-27, 8-20	6 days
16— <i>M. elongata</i> to 5-11	5 days
20— <i>Stenocactus stenogonus</i> —1 bloom	7 days
24— <i>Aporocactus flagelliformis</i> , again 4-25	4 days
<i>M. bucareliensis</i> again 4-23	7 days
27— <i>M. longicoma</i>	4 days
March	
1— <i>Rebutia violaceaeflora</i> to 4-6, again 4-29 to 5-12	4 days
<i>Solisia pectinata</i> to 3-12	6 days
3— <i>Rebutia minuscula</i> to 3-15, again 7-16, 7-24	3 days
8— <i>Hamatocactus setispinus</i> also 4-27, 5-26, 6-15, 7-2, 7-24, 8-16, 9-3, 10-4	4 days
15— <i>M. candida</i>	5 days
28— <i>Gymno. mihanovichii</i> to 5-15 again 9-13	5 days
<i>M. celsiana</i> to 4-4 again 4-18 to 4-28, 5-10 to 5-29, 6-15 to 7-3, 7-26, 9-3 to 11-25, again 12-20 and continuing	3 days
31— <i>Rebutia grandikora</i> at intervals to 5-12	6 days
April	
2— <i>Noto. graessneri</i> to 5-10	14 days
6— <i>Gymno. bruchii</i> , again 5-3	6 days
8— <i>Astrophytum asterias</i> again 5-15, 8-3, 9-3	4 days
<i>M. carnea</i> to 5-12, again 5-31, 6-9	6 days
<i>Sten. melmsianus</i> —1 bloom	6 days
9— <i>Gymno. monvillei</i> to 4-24	4 days

10— <i>Zygocactus truncatus</i> —This had bloomed profusely the preceding November—		7— <i>Echinopsis leucorhodantha</i>	3 days
started again 12-25		again 6-28	
<i>Echinocereus caespitosus</i> —1 bloom	4 days	13— <i>Parodia sanguiniflora</i> to 6-28,	4 days
18— <i>Malacocarpus vorwerckianus</i> to 4-30	8 days	again 7-13, 7-25, 8-12, 8-16	
19— <i>Echinocereus dasycantha</i> to 4-30	12 days	14— <i>Lobivia "Sunset" (Hybrid)</i>	2 days
21— <i>Lobivia wegheiana</i>	3 days	15— <i>Orange "Paramount" (Hybrid)</i>	2 days
again 5-27		again 7-11, 8-6	
<i>Astro. myrio. columnaris</i>	3 days	23— <i>Lobivia famaticensis</i>	3 days
again 6-2, 6-12, 7-13, 7-25, 8-9		27— <i>Echinopsis obrepanda amoena</i> —1 bloom	1 day
<i>Chamaecereus sylvestrii</i> to 6-1		29— <i>Noto. ottonis</i>	
25— <i>Astro. myrio. tetragonus</i>	3 days	July	
again 5-3, 6-11, 8-3, 9-4		15— <i>M. camptotricha</i> , again 9-1	
27— <i>Noto. scopo</i> to 5-27	6 days	16— <i>Red "Paramount" (Hybrid)</i>	
May		20— <i>Cleistocactus baumanii</i> , again 9-9	
1— <i>Astro. capricorne</i>	2 days	25— <i>M. tetracantha</i> , again 9-14	
again 6-11, 7-2, 7-25		August	
3— <i>Pelecyphora asseliformis</i>	3 days	23— <i>Obregonia denegrii</i>	7 days
again 5-26, 6-6, 7-31		26— <i>Ariocarpus retusus</i> , again 9-10, 10-4	
6— <i>Lobivia larabei</i> —1 bloom	2 days	September	
13— <i>Gymno. freidericki</i>	7 days	1— <i>Ariocarpus fissuratus</i>	5 days
again 7-24, 8-3		15— <i>M. collinsii</i>	
16— <i>Lobivia chuirimensis</i> —1 bloom	open only 3 hours	October	
17— <i>Echinopsis campylacantha</i>	3 days	9— <i>Neopoteria atrispina</i>	9 days
again 7-17, 8-6		again 11-30, 12-14	
20— <i>Noto. leninghausii</i> to 5-27, again 10-5	2 days	19— <i>Ariocarpus kotschoubeyanus</i> to 10-25	
23— <i>Echinocactus horizonthalonius</i>	1 day	November	
<i>Echinopsis mirabilis</i>		12— <i>Neopoteria nigrihorrida</i>	
again 6-13, 8-8	4 days	14— <i>Pereskia aculeata</i> —5 blooms open	1 day
<i>Acanthocalycium violaceum</i>		same day	
again 6-16	2 days	December	
25— <i>Pygmy Easter Lily (Hybrid)</i>	5 days	14— <i>Gymno. knuthianus</i>	6 days
again 6-4		20— <i>Steno ochoterrennus multicostatus</i>	4 days
June		MIRIAM STORY HURFORD	
1— <i>Gymno. leptanthum</i>		Rt. 1, Box 18	
6— <i>Rebutia pseudeminuta</i>		Santa Fe, New Mexico	
again 7-24		(Plant names as received)	



FIG. 58. The late Dr. R. W. Poindexter reported the following in an early Journal.

Crassula arborescens growing at 1129 E. Ocean Blvd., Long Beach. The plant is 5 feet 6 inches in height and 8 feet across. It has five main stems, each 6 inches in diameter, and is completely covered with flowers. I have heard the following story about this plant from two sources, but have not further verified it: In its native habitat, this crassula grows so large that the stems are sometimes used as living coffins for defunct negroes. A slab is carefully cut from the stem, the inside hollowed out, the body put in in an upright position and the slab replaced. The margins heal over very quickly so that the remains are completely concealed and protected from possible marauders.

FROM NEW YORK

I was greatly surprised and very much flattered to see my letter to you on the problems of a city grower reproduced verbatim in the current issue of the JOURNAL. I had hoped some of my experiences and solutions might come in handy for others but a "by line" was something else again! Many thanks for the encouragement.

Perhaps some further experiments that have been successful for me might also be useful for others to know about.

All the books that give soil formulas seem to take for granted that things like ground limestone, in various mesh sizes, vermiculite ditto, charcoal ditto, chickengrit, oyster shells, leafmold, coarse river sand, and so forth, are available to anyone. Believe me, it ain't so! . . . We city folks can of course buy things like builders' sand IF we get it in 25 lb sacks. If we don't want to find room for such a stock in our clothes closets we can also go out in the dark of the moon and steal a bagfull of sand from the nearest construction project. Only trouble with that is, the local dogs don't like it. Neither do the cops. As for chickengrit—I tried asking for it in one of the big florist and gardeners' supply houses here and they were VERY polite but they referred me to a feed store. Any feed store, they supposed—they didn't know of one right handy. And so it goes.

I have found the ten-cent store's pet shop a lifesaver. There I can get parakeet gravel, which is nothing more than ground shell mixed with coarse lime-and-sandstone gravel. It also has some charcoal in it. There also I can get small bags of horticultural charcoal, vermiculite, fishbowl pebbles for drainage at the bottom of pots, and all sorts of useful things. There too I found something called "Pellonex," which is "exploded volcanic rock" by its label and is very light, porous and chemically inert and makes a wonderful conditioner for use as an adjunct to, or in place of, sand. I like it better than vermiculite, too, to aerate and hold water too.

The screw-top spray attachments the dime store sells to use with window cleaning compounds, etc., are fine for cacti. They are cheap, fit most screwtop bottles in the bathroom cabinet class, and give a really fine mist spray. Mine works as well on top of an old peroxide bottle as a \$3.00 sprayer I tried. Cost, 39 cents.

Plastic containers (clear) in which cottage cheese and all sorts of similar groceries now come are fine miniature glasshouses for individual pots, when up-ended. I don't know whether I mentioned these in my original story about plastics. I poke holes around the upper part of mine with anything sharp I can find—icepick will do it. This for ventilation.

I like those small 3" pots the ten cent store sells for 2-for-15¢ too. They come *without* holes in the bottom but holes are easily poked through and enlarged to standard drainage-hole size. They are painted clay, and have some of the advantages of both clay and glazed pots. Come in white, red, green and yellow. And in all standard sizes from 3" on up.

My collection has grown to 60 plants now, and the potfull of seedling notos and parodias is flourishing. Am starting a mess of Mammillarias too. Despite Mr. Russell's contention that flowering cacti in an apartment is almost impossible without a greenhouse on the sill, I had a flowering *Escobaria chaffeyi* that bloomed from mid-February to mid-March. A *Mammillaria wildii* has been blooming from early March, several other mams have buds on them; *Gymn. mihanovichii*, *schickendantzi* and *frederickii* are budding—and Mr. Russell please note—a *Rebutia minuscula* produced a flower. Only one, but this plant had been depotted and derooted in JANUARY because of suspected soggy soil. Early March it budded, and on April 8th, flowered. The soggy soil difficulty had crept up on the base of the plant too, before discovered, so any flower at all is something. Look, Mr. Russell—no greenhouses!

AGNES T. HIRSHINGER

RECOMMENDED BOOKS FOR BEGINNERS

GLOSSARY OF SUCCULENT PLANT TERMS—Marshall and Woods

Descriptive terms used in connection with cacti and the other succulents; also includes the pronunciation of the generic and specific names. Mastery of the true names of plants is a personal satisfaction that leads to a richer enjoyment of the hobby for growing things. One of the greatest helps to the student of cacti and succulents. The pronunciation of the names of the plants need no longer frighten the beginner. Many of the genera are illustrated as well as the descriptive terms most commonly used. This book never gets out of date and its recommendations are as high today as in 1938 when it was first published by installments in the Cactus Journal. This third printing is one of the "musts" in a cactophile's library. 112 pages 7 x 10 in., 300 illustrations. Cloth bound, \$3.65

SUCCULENTS FOR THE AMATEUR—Brown

Written for the beginner, this book introduces one to more than 800 of the best succulents. Clear illustrations show 400 named kinds which include those usually found in amateur collections. Contains: 172 pages 6 1/8 x 9 1/4 in., 264 clear photographs, and a color-plate of 78 of the most colorful succulents. Cloth bound, \$3.65. Chosen as one of the 100 Best Garden Books. A MUST. \$3.65 postpaid.

CACTI FOR THE AMATEUR—Scott Haselton—\$3.65

VICTORY PICTURE BOOK—Hummel—50c

ABBEY GARDEN PRESS

132 W. Union Street Pasadena, California

California buyers please add 4% Sales Tax

SPOTLIGHT ON ROUND ROBINS

It is pleasing to state that there have been a number of inquiries to join our Robins, and that everyone who wrote in has been placed. I am still waiting to hear from those who would like to join the two advanced collector's Robins—one, a Cactus and Succulent Robin with members from different countries, the other, a Small Cactus and Mimicry Succulents Robin. Is there anyone who would like to join the Rain Forest Plants Robin, a Mammillaria Robin, or a Cactus and Succulent Robin? A suggestion has been made for a Decorator's Robin using cacti and succulents as theme. There are several interested in this and more would be welcome.

Our new members are Mrs. Alma Keltner, McGregor, Texas, C. & S. R.Robin, No. 2; Miss Agnes T. Hirshinger, New York, N. Y., C. & S. R.Robin, No. 1, and International Robin, No. 1; Mrs. Vernon Hapke, Clayton, Illinois, C. & S. R.Robin, No. 1; Mrs. R. S. Cowan, Perkasie, Pennsylvania, C. & S. R.Robin, No. 8; Mrs. Glen N. Anderson, Russell, Pennsylvania, and Miss Shirley Schrade, Chagrin Falls, Ohio, C. & S. R.Robin, No. 6; Mrs. G. E. Duck, Grand Junction, Colorado, International Robin, No. 2.

I thought it might be interesting to have some notes taken from one or two Robins, and have chosen these from C. & S. Robins No. 1 and 2.

Mrs. G. C. Copeland, Director of Robin No. 2 says, "I am so fond of succulents because they bloom when so many other plants are dormant . . . our plants are really paying off now. Have the following succulents in bloom: Aloe variegata, Euphorbia splendens, Gasteria pulchra and G. maculata, Kleinia stabeliaeformis, Haworthia cuspidata, Crimson Kalanchoe, a Ceropagia and three others. The following cacti are budding, Thelocactus bicolor, Astrophytum asterias, Echinocereus melancentrus and Echinomastus erectocentrus." She went on to say in regard to Epiphyllum oxypetalum, which was being discussed, that "it took up a lot of room, and is pretty when in bloom, but does not begin to compare with Selenicereus macdonaldiae, the Queen of the Night, or S. pteranthus, Princess of the Night." The freezing winter weather with its crippling snowstorm which hit her part of New Mexico came in for mention, and Mrs. Madeline Young, of Arizona, said, "there do not seem to be any dead plants, and only noticed one that was hurt by the freezing weather we had." Mrs. Nancy Ann Duck, of Colorado, said in her letter that she heard many desert plants had died in the long drought in California. Mrs. Copeland replied some might have survived in spite of appearances. Quoting again from Nancy Duck's letter, she said, "I would love to go looking for the big cactus trees that my husband saw several years ago. I have never seen any tree cactus on this side of the mountains, but our search has been limited to a small scope right around the Grand Valley. We find all of our native cacti in sandy or gravelly and rather rich soil. The Echinocereus coccineus var. inermis grows under the pine and cedar, and sometimes just the heads are sticking out." From the letter of Mrs. Ethel Karr, who seems to have been too generous with watering, comes this remark, "I am going to give my Candystick (Kleinia stabeliformis she meant probably) such a letting alone this summer it will be happy to bloom this (next) winter just for a favored bit of space and water." From Mrs. Edna Dierker came this useful hint, "Do you know that Prickly Pears, or any cactus with tiny spines, can be handled by using a piece of heavy wrapping paper as a mitten, holding it between your fingers and the cactus?" From the letter of Mrs. Flo. Schaefer, the last one of this Robin, she sadly says, "Did not water

my cacti much during the winter. Some have grown a lot but I do not have any luck with them when it comes to blooming." I am sure there are a great many of us who feel the same way.

From C. & S. R.Robin No. 1. I took these notes. Mrs. Mary Anderson, Royersford, Pennsylvania, wrote, "My plants, except most of the succulents, were wintered in the third story, where there is plenty of sunshine but no heat from the basement. The succulents I kept downstairs this past winter look fairly well, but I think it is a bit too warm for them." I think she is right, as most of my succulents which had a sunny but colder situation are better colored, the growth more compact than where there is more heat. More water for a few of my succulents, Echeverias, Crassulas, etc. have kept them with me this year. I am one of those people who is erring on the too dry state, and discovered, quite by accident, that succulents need the water while in the house, in the winter. It is a pleasure to see plants in good condition at last." One of our new members, Miss Agnes Hirshinger, is attempting a half hundred cacti in her New York apartment. We shall be interested to know how this experiment turns out for her. The other new member, Mrs. Linda Hapke, wrote, "I have had the native Illinois cacti for five or six years and they are thriving in built-up beds of gravel and soil, made of huge old tractor tires." She added that the soil where she lives is hard and makes it necessary to put her plants in specially prepared beds. Another note from her letter says, "I set my Ferocactus directly in the sand beds, and the large one blooms. The year before last I just set them out in pots and they did not bloom at all." Mrs. Ella Nipper informs us that, "The Ghost Plant (Brynesia weinbergii) is a lovely plant with age. I think they all trail or hang, and my older plant loses its leaves along the stems, from the roots to near the tips, and then makes a new rosette where each leaf was before, and, oh, what a beauty when the stems are hanging covered with these new rosettes." This is all for now from this Robin. Hope I shall be hearing from those of you who would like to be in one.

MRS. GLADYS H. PANIS
P. O. Box 705, Falmouth, Mass.

DETROIT CACTUS AND SUCCULENT SOCIETY

When the Society was founded in 1944, an eager and enthusiastic membership decided to have a monthly bulletin called "The Spinal Column." The advantages of having such a link are manyfold, and our founders were very well aware of this fact. The Spinal Column did quite well for a number of years. Around 1949 the accumulation of sufficient material proved more and more difficult despite outstanding efforts by a few untiring individuals. By the end of 1950, the Society reluctantly decided to discontinue the bulletin.

This brief history points up the fact that it was neither financial nor any other difficulty except insufficient cooperation that led to that regrettable decision.

Lately the desirability and even need for a closer bond between the members was expressed and felt by all and at our February meeting it was unanimously decided to revive the Spinal Column, at least in the form of a monthly news-letter as a starter.

An urgent appeal is herewith made to all members to give their wholehearted support, and contribute to the venture by writing about their individual experiences or anything that might be of interest to the rest of the members.

All material should be addressed to:

Charles Helin
4099 Beaufait Avenue
Detroit 7, Michigan



SPINE CHATS

LADISLAUS CUTAK



In a sense, I'm a great dreamer and the funny part of it is that most of my dreams have come true. Some of these dreams took a long time before they were realized but nevertheless those boyhood dreams were and are being fulfilled. As a young lad of grade school days I dreamed of adventure in far-off places and today I have several thousand miles behind me, filled with thrills and memories of my own field trips into canyon, desert and jungle areas. I dreamed of owning a camera to record some of the fascinating places I would like to visit and "show off" my pictures to interested groups. Today, I have a large collection of color slides and negatives in my possession.

I dreamed of writing stories and have them published. Scott Haselton was the first to print my initial article in 1932, which started me on my horticultural writing career. Then I dreamed of writing a book of some kind but being interested in so many things I couldn't find time long enough to plan it. Now after several hundred articles and pamphlets to my credit a real honest-to-goodness book evolved and another ambition has been realized.

I have kept you informed about my CACTUS GUIDE which Van Nostrand planned to publish. Now after several delays the book has been printed and placed on the market. Don't forget, good old Scott Haselton has a copy reserved for you.

CACTUS GUIDE is a neatly printed book with an attractive color jacket showing a flowering clump of Beaver-tail Cactus taken by Ralph D. Connell. Within its pages I have attempted to include all my experiences as a cactus grower and fancier. I had hoped the publisher would allow me to use photographs in the book but halftones would have increased the price of it; so line drawings were substituted. In this case drawings are justified because they more adequately explain or depict the principal features than mere photographs ever would.

Many folks have written to me that they would like autographed copies. I'll be very happy to autograph my book for anyone but please include enough postage for me to send the book back to you. Remember, too, that I'm not handling the book personally, so buy it from a reliable bookdealer. Hope you will find my book useful and don't be afraid to send me your personal comments or criticisms about it. These things are a great help to any author.

Prof. Eizi Matuda describes a new species of Nopal cactus, *Nopalea escuinlensis*, in the January-March number of *Cactaceas y Suculentas Mexicanas*, official organ of the Mexican Cactus Society. This cactus grows along Cintalapa river, around Escuintla, in Chiapas, from whence it derives its specific name. It is found in the low brush and grows singularly, never forming colonies. The plant attains a height of not more than 3½ feet and has a somewhat cylindrical trunk beset with few spines. Older joints or pads are semi-orbicular, 6 to 8 inches long and 2½ to 4 inches broad while the juvenile ones are oblong-obvate. Areoles contain yellowish glochids and 1 to 3 yellow-

ish spines ½ to 1 inch long. Flowers are 3 to 4½ inches long, of a scarlet-yellow color.

In a previous number, the October-December 1955 issue, Matuda also described a new Prickly Pear, *Opuntia heliae*, naming it for Mexico's foremost cactus authority, Dr. Helia Bravo. It is a low growing cactus which often hangs down from large rocks. The joints are oblong-obvate to suborbicular, 3 to 4 inches long by 1½ to 3 inches wide, finely pubescent and practically spineless, although occasionally 1 to 2 spines may be present. Flowers are yellow and under an 1½ inch long. This prickly pear cactus forms small colonies and comes from the region of Mt. Ovando in Chiapas.

Dr. A. Castellanos describes two new species of *Opuntia* in Lilloa (27, 1953) and at the same time reduces one species into synonymy. The new species are *Opuntia colubrina* and *O. salagria*. The first is a cylindropuntia with lemon-yellow blossoms and pear-shaped fruits. It is quite abundant in the locality where it grows, which is Formosa, in Argentina and in its environs. The second is a platyopuntia, allied to *O. prasina*, and found in several areas in Argentina, particularly around Buenos Aires, Santa Fe, and Cordoba. The joints vary in shape but generally are suborbicular and bear distant areoles filled with short glochids and one (rarely two), slender, rigid spine, about 1½ inches long. The flowers generally appear along the upper margin of the pad and are nearly 5 inches long.

I never did get a chance to tell you about our new king and queen, Mickey and Adeline Kirsch, who were elected at our last convention in El Paso. Those of you who did not get a chance to attend the meeting and meet this couple in person, will want to learn a little about them. Mickey is employed by the Automatic Electric Company in Chicago and besides his cactus hobby is an avid fan of good music. Adeline works for O'Cedar in the order department and is an avid television fan. Mickey read about the convention in El Paso but didn't give it a second thought. Adeline made up his mind and so the two headed southwestward. Now they are very happy that they went for besides the surprise election that made them king and queen they got to know a lot of us cactus nuts. I might add the Kirsches are young at our hobby but already have a houseful of spiny cacti and succulents, and that's the way it should be.

WANTED

Volumes II and III of the National Cactus and Succulent Journal of Great Britain. Quote price to Cactus Journal, 132 W. Union St., Pasadena, Cal.

COLLECTIONS OF MEXICAN CACTI

25 for \$12.50	50 for \$22.50
10 Specimen Mammillarias.....	\$ 6.00
10 Show Plants, all different.....	12.00
Send import tages and cash with order.	
We pay postage and 25% export duty.	
Satisfaction guaranteed	
LA QUINTA—F. SCHMOLL	
Cadereyta des Montes, Qro., Mexico	

FROM MEXICO

I wish to inform my customers that my
1955 Price List
is still good through 1956

FRITZ SCHWARZ

Apartado 347 San Luis Potosi S.L.P. Mexico

MANY RARE KINDS

and old favorites are offered at retail in our free revised Jubilee Price List. All plants are nursery grown as nursery grown really are better.

GATES CACTUS, INC.
Box 247-C — Corona, Calif.

Importer — C A C T I — Exporter

Opuntia elongata crest
Mammillaria compressa crest
Monvillea phatnosperma crest
Mammillaria geminispina crest
Coryphantha echinoidea crest

The above \$6.50 postpaid. USA and Canadian orders must be accompanied by permit from Dept. of Agriculture. Price list of over 300 varieties sent for 20¢ in commemorative stamp.

To insure your plants' arrival in the best condition add \$2.00 for the first half pound and \$1.85 for each additional half pound. Cacti travel better by regular post than do the other succulents.

THE SHINSENEN NURSERIES
Tokushima, Japan

DESERT PLANTS RESEARCH SOCIETY

Desire to contact cactophiles, dealers, collectors and amateurs, in the U. S. A., Mexico and South America, for the exchange of information and if possible purchase of various rare plants and seeds.

T. KAKU
2126, Katase, Fujisawa, Kanagawa,
J A P A N.

CHICAGO CACTUS SOCIETY

The 1956 officers are: Mrs. Lilian Wilkins, President; Chas. Anderson, Vice President; Margaret Radden, Secretary; Olin I. Wahl, Treasurer. The programs for the year are: Jan. colored slides, Feb. propagation, March—Mammillarias, April—plant diseases, May—grafting, June—foreign plants and plant market, July-Aug. vacation.

MRS. MARGARET RADDEN, Secy.
10226 E. Bell Ave. Chicago, Ill.

CORRESPONDENTS WANTED

John R. Wilson, 4550 11th Ave. N., St. Petersburg, Florida, would like to contact other members in Florida.

FRESH CACTUS SEED

Result of Friedr. Ritter's recent expedition
through South America

Beautiful new species of Oreocereus, Cleistocactus, Eulychnia, Copiapoia, Espostoa, Floresia, wonderful new discovery from North Peru. Arequipa, Armatocereus, Corryocactus, Eriosyce, Haageocereus, Harrisia, Horridocactus, Matucana, Mila, Melocactus, Mora-wetzia, Maihuenia, Neopoteria, Neoraimondia, Oroya, Pyrrhocactus, Trichocereus, Soehrensia, Weingartia, etc.

Also large choice of seed of: Astrophytum, Coryphantha, Echinopsis, Lobivia, Mammillaria, Opuntia, Pseudolobivia, Rebutia, South African Mimicry Plants and other Succulents.

New, descriptive and illustrated Catalogue sent
on request.

H. WINTER

Frankfurt/M.-Fechenheim, Germany

Supplier of Cactus Seed for over 25 years.
Purveyor to Botanical Gardens at home and abroad



EPHYLLUM HANDBOOK—Scott E. Haselton

The purpose of this book is to help one to know and enjoy his plants to the fullest extent. For the scientific minded there are descriptions of the genera in the Ephyllanaceae and the keys of Schumann, Berger, and Britton and Rose. For the beginner, the pictures alone will tell the complete story of these fascinating plants—how to make them grow and flower. Contains: 250 pages 5 1/2x8 in., 170 photographs, several color plates. Printed on the best coated paper, bound in Buckram \$4.00.

LAD CUTAK'S BOOK NOW READY

The "Cactus Guide" is now ready for distribution.

This book supplies the information essential to home cactus culture. Though the cactus flourishes under conditions ranging from the greenhouse to steam-heated apartments, maximum beauty in flower and form depends on the knowledge of a few simple principles. Following Mr. Cutak's expert guidance on soils, feeding, rest periods and watering will help you to achieve astonishing results, while the chapters on culture and propagation will enable any collector to be expanded inexpensively. More than one hundred and seventy of the important cultivated species of cactus are identified and classified, with their appearance, native habitat, requirements and characteristics. Particular attention is paid to the kinds most rewarding to the home grower; plants like the Jungle Cactus and its hybrids; and the Pincushions and Nightblooming Cereus. Drawings by the author illustrate varieties and techniques, and there is included a list of the many cactus clubs here and abroad.

The price is \$3.95 postpaid. California buyers please add sales tax.

Abbey Garden Press, 132 W. Union St., Pasadena, Calif.

FROM THE NEW YORKER

Sent by Lucia and Joe Kres

A lady we know on East Eighty-first Street has had phenomenal success growing cactus plants indoors. Visiting her the other day, we asked for the secret of her triumph. "Well," she said, "I bought these plants in El Paso, so I subscribe to an El Paso paper, and every time it says it rained in El Paso, I give the cactuses a little water."

